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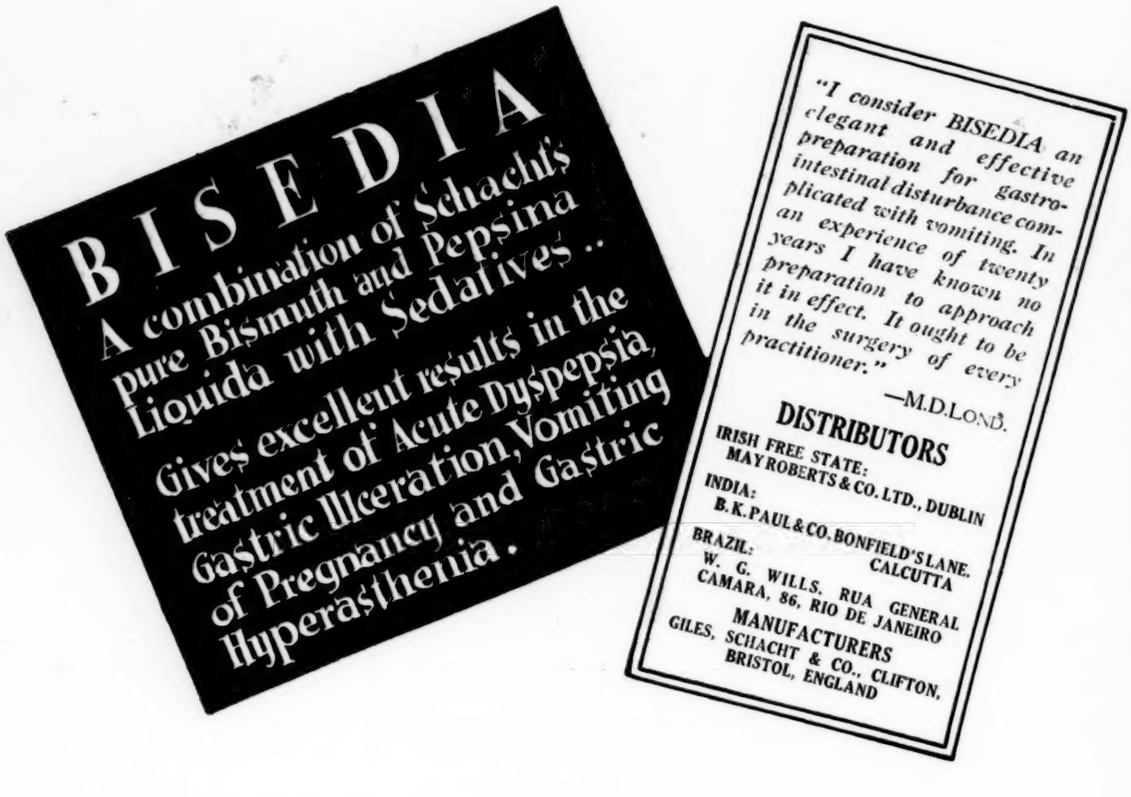
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## Remarks

ON

# TUBERCULIN IN DIAGNOSIS*

BY

S. LYLE CUMMINS, C.B., C.M.G., M.D.

PROFESSOR OF TUBERCULOSIS, UNIVERSITY COLLEGE OF SOUTH WALES AND MONMOUTHSHIRE

My first attempts, inspired by the then recent publications of Von Pirquet and Wolff-Eisner, to utilize cutaneous tuberculin tests in the diagnosis of tuberculosis were carried out at the Royal Victoria Hospital, Netley, in 1908 and 1909, and the results were reported in the *Journal* of the Royal Army Medical Corps in June, 1909. The method adopted was a modification of the Von Pirquet technique, and the test was applied to known cases of tuberculosis as well as to suspected cases and clinically non-tuberculous persons. The non-tuberculous persons proved to be quite as sensitive to tuberculin as the known cases. The conclusion drawn was as follows:

"The practical point at issue in diagnosis is the presence or absence of active disease. 'Surface vaccination' is quite unreliable as a means of answering this question."

Later, with the introduction of the Mantoux intradermal technique, I decided to try out this method as one perhaps better calculated to differentiate between stages of tuberculous infection, and in 1928 and 1929 I applied the intradermal method both in healthy adults and in known cases of tuberculosis, comparing the results both as to end-point of tuberculin dilution causing reaction and actual size of reaction area. In these tests, reported in the *British Medical Journal* of February 23rd, 1929, the interesting fact came to light that the reactions tended to be, on the whole, more definite and the sensitivity more marked in non-tuberculous adults than in the tuberculous. A further comparison was made, in conjunction with Dr. S. B. H. Walker, during 1929 and 1930, and the intradermal reactions to serial dilutions of tuberculin were studied on standard lines in 100 cases of pulmonary tuberculosis and in 100 non-tuberculous persons under treatment in the Cardiff Mental Hospital, the opportunity to examine the latter being afforded through the kindness of Drs. Goodall and McCowan, the medical directors of the institution during the period. The findings were described in *Tubercle* in July, 1931.

All these investigations tended to the same conclusion, which has been amply confirmed by numerous workers, that, as a test for "active clinical tuberculous disease," the cutaneous and intradermal tuberculin tests are too delicate; and that "positive" reactions elicited by these methods in adults cannot be interpreted to mean "active" tuberculous disease. While this is true, however, the problem of the value of these cutaneous techniques in diagnosis is not quite so simple as it appeared to be when I attempted to exploit tuberculin in the diagnosis of tuberculosis in soldiers in 1909.

### POSITIVE REACTION IN EARLY LIFE

It has been proved by many reliable workers that the cutaneous tuberculin sensitivity so constantly observed in healthy adults in "civilized" and "industrialized" communities is, as a rule, absent in infants, and that, while it tends to increase with each year of life, it is still very low in the earlier age groups except in the homes of "open" cases of tuberculosis, where the contacts tend to give a high percentage of positive reactions even in infants and young children. This observation raises the question of the value of a "positive" in early life, and here the answer is not so simple as in relation to adults. My own view, based, however, on an integration of the observations of others, is that a markedly positive reaction either to the Von Pirquet or the Mantoux tuberculin test has a serious significance during the first year of life. There can, I think, be no doubt that sensitivity to tuberculin proves the existence of tuberculous *infection*; and, while we have reason to know that infection is, in adults, not merely consistent with health, but usually present, we know also that very early infection, acquired in any considerable concentration before the tissues have had time to accommodate themselves to their bacterial environment, is very likely to lead on to severe and often fatal disease.

A recent paper by Blacklock (1932) indicates the extremely high risk of fatal tuberculosis in the case of infants heavily enough infected to harbour tuberculous lesions visible to the pathologist; and the Registrar-General's statistics show, year after year, that the death rate from this disease is exceedingly high during the earlier life periods. We should, therefore, view with grave anxiety the very early appearance of a "positive" tuberculin response in an infant or in a child in the first year or two of life, since a "positive" implies infection, and infection at this stage usually, though not always, implies the near approach of active disease.

### A POSITIVE IN ADULTS

I have expressed the opinion several times already that a "positive" in an adult brought up in an "industrialized" or "civilized" community has little or no diagnostic significance. This view, however, does not extend to "positive" tuberculin responses in adults whose early years have been passed in communities of a "primitive" type and, perhaps we ought to add, "whose more recent ancestors have resided in communities with a primitive type of culture." These adults, comparable perhaps in some respects to the earlier age groups in Europe and America, appear to develop tuberculo-allergy of a much more active variety than is common in adults in communities of an older civilization. Coming from districts which, through the industrial developments of recent years, have lately become endemic centres of tuberculous infection, African natives may possess an allergy potential far higher than what we encounter in this country, yet they are without the relatively high power of tuberculo-resistance common in adult Europeans. In such natives, a well-marked "positive" tuberculin reaction has a much more formidable significance than elsewhere.

In Report No. XXX (vol. v) of the South African Institute for Medical Research (1932) will be found an account of tuberculin tests on South African native mine recruits on arrival for work at Johannesburg, together with the results of a "follow up" of the tested groups through their subsequent periods of work in the gold mines. On page 97 of the Report the results of this inquiry are set forth, and show that the incidence of tuberculosis was about five times as high among those who had given a "positive plus" reaction than in those found negative to the dilutions used, 1 in 5,000 and over; while the mildly positive reactors were intermediate. The actual figures of incidence, based on 93,000 natives tested with tuberculin by the intradermal method, were as follows: in those recorded as "positive plus," 1,547 per 100,000; in those recorded as merely "positive," 683 per 100,000; and in the "negative," 347 per 100,000. These figures can only mean that the "positive plus" reactions were associated with active, though clinically unrecognizable, tuberculous lesions which tended to become generalized during the stress of a new and exacting occupation. This does not mean that a "positive plus" reaction was diagnostic, even in these highly susceptible

* Made in opening a discussion in the Section of Tuberculosis at the Centenary Meeting of the British Medical Association, London, 1932.

persons, of clinically active tuberculosis. It merely means that, out of 3,879 persons giving these marked reactions, sixty developed clinically active tuberculosis during the following year or so of work on the mines. The remaining 3,819 got safely through their mine contracts without being recognized as tuberculous, in spite of the repeated weighings and examinations which are in operation to detect and remove recognizable cases.

Has a strongly positive reaction any similar significance in this country? I have already expressed the opinion that in infants and young children it has this same kind of significance ; that it must be taken to mean the presence of an active focus which, in early childhood, is always accompanied by danger of generalization. In European adults, however, my own observations, as far as they go, do not suggest any such relation. Out of 100 mental cases tested with graded dilutions of tuberculin in 1929 and 1930, eight have since developed tuberculosis. Of these, one had reacted up to a dilution of 1 in 100,000, two to 1 in 10,000, four to 1 in 1,000, and one had been negative even to 1 in 500, the strongest concentration used.

Here the incidence was definitely greater among those who had been proved to possess low or negative tuberculin sensitivity ; but the figures are too small to be of much importance. A far larger number have since been tested elsewhere by one of my co-workers, and it is hoped that a follow-up of their tuberculosis incidence will throw further light on the point at issue.

### Value of a " Negative " in Excluding Tuberculosis

So much for the diagnostic value of a " positive " reaction to a cutaneous tuberculin test. But there arises also the question of the diagnostic value of a " negative " in excluding tuberculosis. Recent work by Dr. D'Arcy Hart has, in my opinion, gone far to prove that the diagnostic value of a " negative " may be very great, especially in childhood. I propose, however, to leave this question, so far as it concerns childhood, to Dr. D'Arcy Hart himself, who is taking part in this discussion. All I wish to say is that, in attaching any weight to the value of a " negative " in excluding the presence of tuberculous infection, the negative must be made as conclusive as possible ; it is quite insufficient to stop short at a Von Pirquet test, even with full-strength tuberculin, or at a Mantoux test with 1 in 1,000 tuberculin. Many persons negative to these concentrations are, in reality, positive if tested intradermally with 1 in 100 or 1 in 10.

There is another aspect of " negative " findings, however, which deserves notice, especially in regard to adults—namely, the loss of tuberculin sensitivity which goes with advanced tuberculosis. This is hardly likely to introduce practical difficulties in diagnosis, as the nature of the disease is usually beyond doubt at the advanced stages in which the test may become negative. But if the word " diagnosis " be extended to include prognosis, then cutaneous and intracutaneous tuberculin tests may be said to have some significance, though only in the terminal stages. It does not appear that tuberculin sensitivity is ever absolutely lost until the very end, but there is a gradual fading of sensitivity, affecting both the intensity of the reaction to strong concentrations and the end-point of reaction to graded dilutions, as the resistance of the patient wears out under the stress of progressive disease. This fading of tuberculin sensitivity should, I think, be definitely distinguished from the desensitization which may arise in the course of a successfully resisted infection or through tuberculin therapy ; a desensitization which is, in my opinion, to be associated rather with the acquisition of immunity than with loss of resistance.

I recently tested by the Mantoux technique six patients who had been under treatment for considerable periods by my friend Dr. Gilchrist, all of whom had arrived at a toleration of large doses of bacillary emulsion given subcutaneously. In one, the Mantoux test was completely negative in every dilution down to 1 in 500, the strongest concentration used. Four were negative to 1 in 10,000 but weakly positive to 1 in 1,000, that is to say, less sensitive than is commonly the case in tuberculous persons of their type. One, however, although he had received a subcutaneous dose of 0.7 c.mm. of bacillary emulsion a week earlier without reaction, experienced a sharp constitutional as well as a marked local reaction to about 1.1 c.mm. of old tuberculin intracutaneously. Apart from this anomalous case which was apparently tested just at a moment of raised tuberculin sensitivity, treatment with tuberculin had definitely lowered the allergic potential of these patients, yet all of them were doing well and in no sense " terminal " cases.

F. Allen, testing native mine workers at the Witbank Coal Mines in the Transvaal, has observed that " old mine workers," tested for a second time after some years of work, tend to be definitely less tuberculin-sensitive than at their first tuberculin test on arrival. Here it would seem that the repeated exposure to reinfection incident to life in the mines and in the compounds has had the effect, not of raising, but of lowering the allergic state, though such men appear to be, on the whole, more resistant than new arrivals. One lesson appears to stand out clearly from all this South African work, with which I have had the privilege of being closely associated—namely, that while a marked positive Mantoux reaction is by no means diagnostic of clinically recognizable tuberculosis, it is to be regarded as the sign of an active, though " larval," lesion from which infection may, under unfavourable circumstances, generalize throughout the organism. Another lesson, of greater importance from the point of view of the pathogenesis of tuberculosis, is that marked tuberculo-allergy may exist without any corresponding acquisition of tuberculo-immunity. Immunity and allergy may be due to the same cause, infection, but they are not in any sense identical or even, necessarily, coexistent.

Cutaneous tuberculin tests, then, whether of the Von Pirquet or the Mantoux type, or of the type of Stichreaktion of Epstein, are reliable tests for allergy, and, by implication, for infection ; but they are not of much value as tests for clinically active tuberculosis in adults nor as tests for the existence of acquired immunity.

### Koch's Subcutaneous Test

There remains, however, the subcutaneous tuberculin test as originally devised by Robert Koch. This test is definitely inapplicable to persons with pyrexia, a fact which greatly limits its utility in differential diagnosis ; nor is it safe as a test in persons likely to be harbouring lesions of the easily activated type. In such persons, focal and general reactions are things to avoid, and there is no justification for exposing them to the risks incidental to activation of their lesions for the sake of an added point in the search for a diagnosis. There is one type of case, however, in which the risks are minimal and the advantages to the patient sometimes sufficiently important to justify the subcutaneous test. I refer to the chronic, productive, inert, sputum-negative cases which often come to our notice as ex-soldiers seeking to establish a claim to continuance of pension. These chronic and resistant cases stand the subcutaneous test well as a rule, and the risk is not serious. Koch's opinion was that a positive reaction to a dose of 10 milligrams might be regarded as diagnostic while there was no chance of a positive reaction of the general or pyrexial kind in a healthy person until the limit of 25 milligrams was reached. These quantities are, perhaps, expressed too

exactly, and, in the light of modern experience, most of us will hesitate to draw the line sharply between tuberculous infection of a degree consistent with health and tuberculous infection just severe enough to constitute disease. But, of all the tuberculin tests, the subcutaneous method of Koch remains the most valuable in diagnosis. It depends upon general and focal reactions which are, in themselves, evidence of active disease, and, when elicited by tuberculin, may be accepted as diagnostic of clinically active tuberculosis. The only thing against it is its risk, and, in my opinion, there is no excuse for taking any avoidable risk in the attempt to establish a diagnosis.

I have indicated one kind of case in which Koch's original test may be applied with safety, and there are doubtless fairly numerous cases in which the subcutaneous test may be used without ill results by experienced physicians. Apart from these, it appears to me that the Mantoux test, applied with due skill and interpreted with discretion, is calculated to give valuable information, whether positive or negative, in the earlier years of life, and that, apart from the diagnosis of clinically active tuberculosis, this test is invaluable as a means for determining the distribution of infection in communities in which epidemiological investigations are contemplated. On the whole, for purposes of diagnosis in man, the tuberculin test, in all its varieties, is definitely inferior to the combined radiological, physical, and laboratory examinations which have come to be the routine methods.

# THE POSITION TO-DAY OF TUBERCULIN IN TREATMENT*

BY

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The introduction of tuberculin was one of the great tragedies of medical research. Premature in its birth, damaged by the excessive zeal of its earliest exponents, or foster-parents—for Koch himself was cautious in his original claims—it has received the fate of the cripple, at times excessive care, at others neglect. Forty-two years have elapsed since its first introduction, and it remains a baffling and elusive enigma, in spite of an almost incredible amount of investigation, scientific and otherwise. To-day some authorities claim that it is not specific in its effects, and that it should be entirely discarded in treatment. On the other hand, there are enthusiasts who claim a specific and curative action for it and recommend its use widely, while there are others who have used it continuously for many years and are convinced that it has a definite though limited value. The time would therefore seem ripe for a critical and practical review of its effects in treatment. If this discussion could serve to clarify the position, especially to determine which of the three attitudes I have just mentioned is the correct one, then a notable success will have been achieved.

I should like to put forward the following points for discussion:

1. Is tuberculin useful in treatment?
2. If so, what are the indications and contraindications for its use?
3. What forms is it best to employ?
4. Dosage—spacing and limit of doses.
5. How should it be given?
6. How does it act?

* Read in the Section of Tuberculosis at the Centenary Meeting of the British Medical Association, London, 1932.

## TUBERCULIN IN TREATMENT

It may be worth while to consider briefly certain opinions concerning tuberculin.

(*a*) It is generally accepted that it is completely innocuous to a healthy non-tuberculous person, even in large doses, while in those who have been infected it produces the well-known tuberculin reaction with its three effects—local, focal, and systemic—in greater or less degree, depending on the form employed and the method of administration. It has been supposed until recently that this reaction is specific, and that it is an allergic phenomenon. Both of these contentions have now been called in question, since other protein substances are said to produce a positive reaction in tuberculous patients, and the skin effects have been stated to be due to a general non-specific hypersensitiveness to toxic substances in this disease.

(*b*) It is significant that its routine use has been greatly restricted in many sanatoriums, and entirely discarded in others; it receives scant mention in most textbooks of medicine and in special manuals on diseases of the chest. Fishberg, in the latest edition of his well-known textbook, joins the ranks of those who advise against its use; he does so on the grounds that it is not certain that its action is specific, that it is difficult to estimate accurate dosage, especially of different preparations, and that it is altogether wanting in therapeutic effects when given in infinitesimally small doses, and may be decidedly harmful in large amounts.

(*c*) I have always been much impressed by the fact that, in the so-called surgical localizations of the disease—that is, in glands, bones, joints, and the ocular and genito-urinary systems—tuberculin has a considerable vogue, and that, in these conditions, it is the three well-known preparations of Koch which are chiefly employed, whereas in pulmonary tuberculosis the varieties and modifications of tuberculin which have been advocated are remarkably numerous, extending to more than a hundred. This has always suggested to me that there must be some fundamental difference between medical and surgical tuberculosis, and it is evident that the effects of tuberculin have been disappointing in the strictly medical cases, notably in pulmonary tuberculosis. The fact that so many attempts have been made to modify tuberculin for medical as opposed to surgical use in treatment suggests that it has been found wanting in some respects. On the other hand, I cannot but feel that if it were entirely useless it would have been discarded long ago, and would not be the subject of a serious discussion forty-two years after its introduction. My own experience would lead me to believe that tuberculin has definite therapeutic uses, and that these are considerable in the localized or surgical manifestations, and strictly limited in the pulmonary forms of the disease.

## INDICATIONS AND CONTRAINDICATIONS FOR ITS USE

In cases of pulmonary tuberculosis I have only found tuberculin useful in those patients in whom the disease has progressed satisfactorily towards arrest, but who are left with a small amount of expectoration containing tubercle bacilli. A short course of tuberculin may serve to get rid of the bacilli, to dry up the sputum, or to do both. Such effects alone, if established, would justify its use, since the patients are often enabled to return to their families and to their work without fear and without risk. Many employers will not take back a patient of whom it cannot be certified that the sputum is tubercle-free. Tuberculin has been recommended in chronic cases slow to settle down, of the type described by Inman as "resting afebrile, ambulant febrile." I am less sure of its value in such cases, and I think its effects

require very careful watching ; but it is worth considering. The patient should be kept in bed till it is clear that the tuberculin is not producing any severe reaction, and at the first indication that there is hypersensitiveness to it, administration should be stopped or the dose reduced. I am convinced that tuberculin is of great use in some surgical manifestations, notably in localized genito-urinary tuberculosis, particularly where such localizations coexist with chronic or latent pulmonary tuberculosis and where surgery is impracticable or inadvisable. In localized ocular tuberculosis it can be very helpful, if cautiously used, with the strictest control of dosage, in collaboration with an ophthalmic surgeon.

Tuberculin should not be given in those cases in which there is active, spreading, caseous disease, or recent active " spread " ; it is likely to be harmful by inducing a definite focal reaction, which cannot be controlled, and may be the means of increasing the softening of the caseous areas, or of spreading the disease. It should certainly not be given if there is any degree of continuous, remittent, or intermittent fever. The patient is already receiving more of the toxic products of the bacillus than he can deal with, and any administration of tuberculin is likely to do harm. It is generally recognized that it can only be harmful in any form of miliary tuberculosis, whether this be generalized or local. It should not be given if there is definite albuminuria, except where this is due to renal or vesical tuberculosis, since prolonged administration of tuberculin has been known to be followed by nephritis.

### Best Forms in which to Employ Tuberculin

The varieties of tuberculin may be classified as follows:

1. Filtrates of cultures concentrated, or otherwise modified, especially on glycerin broth media. Of these, Koch's original or old tuberculin is the type.
2. Extracts from the bacillary bodies—Koch's T.O. and T.R.
3. Emulsions of ground-up bacilli—Koch's new tuberculin or B.E. Various processes may be applied before emulsification, as, for example, in Dreyer's diaplyte vaccine, in which the bacilli are treated with formalin and afterwards with acetone, with a view to removing their acid-fast characters.
4. Vaccines made from living attenuated cultures, of which B.C.G. is the type.

It should be recognized that any of these varieties may be made from human, bovine, or other sources. In this connexion I may perhaps note a fact which is not generally known, that the Therapeutic Substances Act, 1925, which is concerned with the preparation of many agents employed in treatment, restricts the name " tuberculin " to the first of these groups, and advises the term " tubercle vaccine " for any substance obtained directly from the bacterial bodies.

My own experience is limited to the three preparations introduced by Koch—namely, old tuberculin, tuberculin T.R. and B.E. There seems to be agreement on the bacteriological side that the tuberculin reaction does not vary in character with the preparation, though it may differ in degree. Attempts to detoxicate tuberculin or modify its toxic effects seem to succeed only in diminishing or destroying its beneficial effects. Personally I prefer B.E. for most medical purposes ; it seems to be easier to control and to cause less severe reactions. In surgical cases, particularly tuberculosis of the epididymis, bladder, and prostate, I, in co-operation with my surgical colleagues, have used T.R. I have generally used the tuberculins or tubercle vaccines prepared from human bacilli, but in some ocular cases I have thought that bovine tuberculin has been effective where the human preparation has failed. It is sometimes recommended to start with the bovine tuberculin and later to transfer to the human preparation.

### Dosage—Spacing and Limit of Dosage

The question of dosage is a difficult one. Believing as I do that tuberculin can be powerfully toxic and harmful if injudiciously given, I always start with infinitesimal doses in pulmonary cases, and I never increase the dose till it is clear that the patient is immune to the one last given. I aim at avoiding any general reaction, and therefore advise that the temperature be taken regularly for at least the day of injection and one or two days after. I usually begin with 1/500,000 mg., and if there is no reaction from this I give, three or four days later, 1/400,000 mg., and then, at the same intervals, 1/300,000 mg., 1/200,000 mg., 1/100,000 mg., or smaller increases if the patient is sensitive. After this the doses can be more rapidly increased—that is, 1/75,000 mg., 1/60,000 mg., 1/45,000 mg., and so on, but I usually extend the interval to seven days by this time. Provided there is no serious reaction and that there is clinical evidence of improvement, I am prepared to go on slowly increasing the dose at weekly intervals or sometimes at ten-day periods till I reach a dose of 1/500 mg., but I rarely go beyond this. Occasionally, when doses of this amount or larger, are reached, severe local reactions may occur, with marked local infiltration in and under the skin and even caseation and softening. This need not necessarily interrupt the treatment, but suggests longer intervals or smaller doses. In surgical cases in which there is no pulmonary lesion it is not necessary to start with such small doses, and T.R. may be used commencing with 1/10,000 mg., and working up by weekly doses to 1/1,000 mg., at which level it may be maintained for long periods.

### Method of Administration

Tuberculin can be administered by the mouth, subcutaneously, intracutaneously, and percutaneously by inunction. I have used almost exclusively the subcutaneous method, as the dosage would appear more easy to control. Each of these methods has, however, had its exponents, and I can apparently give satisfactory results.

### Action of Tuberculin

In my judgement the weak point in tuberculin treatment is that it is impossible to foretell the degree of focal response to any dose, or to control its degree except by the most cautious graduation of dose, and unfortunately a severe reaction occasionally follows a very slight increase in the amount to which the patient has previously been immune.

It has been generally assumed that its action is specific and that it is beneficial chiefly by its focal effects, tending to hyperaemia and subsequent increase of reactionary changes, leading to fibrosis and arrest. It is clear, however, that a high degree of tuberculin tolerance can be achieved without any permanent benefit, and sometimes without any definite clinical amelioration.

I have been forced to the conclusion that tuberculin only helps in medical cases, when the conditions approximate to those in surgical conditions—that is, when the focus of disease is localized and non-toxic. In other words, when the lesion is relatively circumscribed and not pouring out toxic products into the circulation tuberculin can be helpful ; on the other hand, when it is spreading and locally infective, tuberculin is dangerous. The exception is, I believe, when a chronic local lesion is just sufficiently active to produce slight rise of temperature, owing to the extra-ventilation of the lungs occurring from slightly increased exercise. The very cautious administration of tuberculin may turn the scale, but I think even here there is risk, unless the greatest care is taken.

It is clear that there is still scope for much research, and the recent work on the special effects of various chemically

separated fractions derived from tuberculin or tubercle vaccines affords some encouragement. It has been shown by Sapin, Doan, and Forkner that the lipid fractions of tuberculin lead, when injected, to proliferation of epithelioid cells, while Seibert has demonstrated that the protein fraction induces necrosis in a tuberculous animal and not in one free from that infection. Tuberculin and tubercle vaccines are powerful substances. It is certain that they can do harm. What I hope may emerge from our discussion is a clear conception of the conditions under which they can be helpful. I am still hopeful that a real specific treatment will eventually be discovered on bacteriological lines, and I think the biochemists, with the bacteriologists, may eventully provide the solution of this difficult but fascinating problem.

# THE COMPARATIVE PHYSIOLOGY OF THE MENSTRUAL CYCLE *

BY

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Research on reproduction chiefly owes its remarkably successful growth in the past fifteen years to the excellence of an organized method that is built on a basis of interlocked histological and experimental observation. By this means the oestrous cycles of many mammals have been elucidated, and various reproductive hormones have been discovered and isolated. Unfortunately for physiological knowledge, it is a method that is not readily applicable to human beings, and the difficulty of obtaining well-documented normal histological material of the human uterus and ovaries, together with the impossibility of conducting experimental research into the human menstrual cycle, has prevented agreement about many essential points that must necessarily be settled before profitable comparison between human and other mammalian reproductive mechanisms can be instituted. Actually, such comparison was being attempted more than thirty years ago, when the question of the homology of the menstrual cycle could not have been of more than academic interest. Many still treat it as a purely academic problem ; theirs, however, is an unsound attitude, a reaction to years of seemingly sterile discussion. To-day, with preparations like oestrin and "anterior lobe hormones" that are ready to be applied in clinical medicine, the question of the homology of the menstrual cycle is of distinct practical importance. The human placenta and human urine are the common sources of the supplies of reproductive hormones used in laboratory practice. The biological properties of the substances extracted from them are determined by experiment on lower mammals. The attempt to apply these substances in morbid human conditions should, as far as possible, be rational and non-experimental. To attain this ideal, full consideration must be given to the similarities and dissimilarities between the menstrual cycle and the oestrous cycles of lower mammals.

## SEXUAL-SKIN ACTIVITY IN PRIMATES

In approaching this question of homology, it must be remembered that not only man but all the Old World primates that have been studied have a menstrual cycle, and that considerable advances in our knowledge of the menstrual cycle have been made through the study of apes and monkeys. This fact raises the question whether or not the cycles of all primates can be regarded as being the same in type. The common characteristic of all is bleeding from the uterus approximately every four weeks. Although the differences between the cycle of one primate and that of another do not affect this phenomenon, they are nevertheless conspicuous. Thus, in some Old World primates the skin of the external genitalia—and also of neighbouring parts of the body—is specialized, and forms a highly sensitive area which, at regular times in the cycle, swells or becomes highly coloured, or does both. Other Old World primates, including man, do not exhibit such changes, and their only external physical manifestation of the cycle is the menstrual bleeding. These questions have been discussed at length elsewhere,[29 30] and it was concluded that the general plan of the cycle is the same in all the primate species that manifest activity of a "sexual skin." Menstruation normally occurs at fairly regular intervals of about thirty days. Immediately after its onset the skin around the external genitalia becomes red in colour and swells, reaching a maximum before the middle of the cycle. Shortly after the mid-point the activity of the sexual skin, as a rule, suddenly decreases, and the skin resumes its quiescent appearance, which continues until the onset of the next bleeding, when it again becomes active.

The main variation in this kind of cycle is in the actual character of the external changes. They are very pronounced in animals like baboons and chimpanzees, the swelling of the sexual skin in the former being sometimes as large as about one-eighth of the normal volume of the trunk of the animal. In others—for instance, some macaques—the changes are very slight, and such catarrhines can hardly be differentiated from the group which includes man, where there are apparently no external changes. Another factor which varies is the time after the mid-point of the cycle taken by the skin to resume its quiescent appearance. Although the initial change seems to be abrupt in all primates, the further absorption may be slow, as, for example, in rhesus monkeys, or very rapid, as in some baboons. Instead of these differences confusing the issue, however, they significantly add to our understanding of the menstrual cycle as a characteristic of Old World primates.

Thus, since the time relations of sexual-skin activity and menstrual bleeding are approximately the same throughout Old World primates, it may be inferred that the physiological mechanism of the skin is the same in all. Actually it has been shown that it is the oestrous hormone, oestrin, which activates the sexual skin in such widely different genera as Macaca (macaques),[1] Papio (baboons),[23] and Cercocebus (mangabeys).[27] The physiological evidence thus indicates that sexual-skin activity is an oestrous phenomenon, in the sense that vaginal cornification is in the mouse. The facts of behaviour point to the same conclusion. Observations recorded elsewhere[30] show that those subhuman primates which experience pronounced external cyclical changes are more sexually active in captivity than those that do not. They also show that sexual activity in normal conditions varies directly with the degree of activity of the sexual skin. For example, female baboons are more receptive during the period of swelling than at other times.

Catarrhine primates could therefore be arranged in a series showing all degrees of externally visible oestrous changes. The period of functioning of the oestrous hormone, so far as can be judged, is much the same in all, irrespective of the actual character of the sexual-skin changes. In the absence of conflicting data, it thus seems legitimate to infer that in catarrhine primates which do not show external changes in a sexual skin, the period of homologous oestrous hormone activity is also the same. Accordingly, although knowledge of normal changes occasioned by the oestrous hormone during the human

* Read in opening a discussion in the Section of Comparative Medicine at the Centenary Meeting of the British Medical Association, London, 1932.

menstrual cycle is lacking, comparative study of other types of catarrhine menstrual cycles suggests that, if there are any such changes, they occur mainly in the first two weeks following the onset of menstrual bleeding. This period can be called the follicular or oestrous phase of the menstrual cycle.

### OVULATION

In the non-primate mammal the follicular phase of the oestrous cycle ends with ovulation. The corresponding phase of the menstrual cycle is no exception, for it is generally believed that ovulation occurs normally about two weeks before the onset of menstruation, at the time when the abrupt decrease in sexual-skin activity indicates that the phase is coming to an end. This belief, however, has recently been questioned by Evans and Swezy,[6,7] who have attempted to prove "that primate ovulation occurs at all periods of the cycle." In view of its important implications and already far-reaching reverberations, their strong statement* of this radical view demands close examination. But before their main arguments are reviewed, it is advisable to consider briefly the cyclical endometrial changes that occur in mammals.

### CYCLICAL CHANGES IN ENDOMETRIUM

Evans and Swezy's own remarks about endometrial changes provide an introduction to this topic. These authors consider the oestrous cycle (by which they apparently mean the vaginal cell cycle, as well as the cycle in behaviour) and the utero-ovarian cycle separately. They very briefly describe the latter cycle as consisting of "growth of the endometrium in the pre-ovulation stage, the period of maturity of the endometrium, and its regression in the later post-ovulatory stages. The changes proceed *pari passu* with the growth and rupture or degeneration of the ovarian follicles." Thus, the endometrium of the dog grows under the influence of the follicular hormone, oestrin, during the period of growth of ovarian follicles. When the follicles rupture and corpora lutea form, "there is further glandular growth but more especially glandular hypertrophy." On the other hand if, as may happen in the cat, the maturing follicles become atretic, the uterine mucosa that has grown up under the influence of oestrin regresses.

Their account is a very fair description of the biphasic oestrous cycle, a cycle in which ovulation sharply demarcates the first or follicular phase (in which the endometrium is growing under the influence of oestrin) from the second or luteal phase (in which the endometrium is being subjected to the action of luteal hormones). It does not sufficiently emphasize, however, the stage of endometrial degeneration which occurs, especially in the dog, at oestrus (that is, at ovulation) and which is distinct from the "regression in the later post-ovulatory (luteal) stages." Evans himself,[5] however, appears to have confirmed this important finding of several earlier workers. Oestrous uterine degeneration is not an event confined to the dog. Its existence has been established in the rat, mouse, guinea-pig, and pig, and it is generally attributed to the removal of the influence of oestrin at the time of ovulation.[4] It is a much more abrupt change than the slow "regression" which, according to Evans and Cole,[5] ends the pseudo-pregnant period in the bitch—although Marshall and Halnan's[18] descriptions suggest a somewhat abrupt end to this phase as well. The important point to recognize about a typical biphasic oestrous cycle is, therefore, that it consists of two phases of uterine growth separated by two phases of uterine degeneration.

It is in its apparent lack of phasic variation that the menstrual cycle, and particularly the human cycle, differs so conspicuously from the oestrous cycle. The generally accepted view of the cyclical changes in the human uterus may be summarized as follows: spontaneously occurring ovulation divides the cycle into pre-ovulation and post-ovulation (follicular and luteal) phases. The endometrium, destroyed at menstruation, is regenerated in the first few days of the cycle, and the end of the pre-ovulation phase—the "interval"—is a resting period in which the mucosa is shallow and the glands are straight. The luteal growth phase of the endometrium begins when the corpus luteum is formed after ovulation, and ends at the next menstruation. During this luteal phase the endometrium increases in depth and its glands become sinuous and distended with secretion. It is now also believed that sometimes ovulation may not take place, and that menstruation then occurs from an interval endometrium at the expected period.

This brief description of the human cycle applies equally to the internal changes of the cycle of catarrhine monkeys. It should be noted that menstruation from an interval endometrium in the absence of ovulation has been found to occur commonly in Entellus langurs, rhesus monkeys, and common macaques, but that it has not been seen in baboons, in which spontaneous ovulation seems to take place regularly in each cycle.[31] It is also important to recognize that in both the human and sub-human menstrual cycle the period of menstruation is the only time when the endometrium normally shows signs of degeneration. None occurs during the interval period, when ovulation takes place.

### RELATION OF OVARIAN TO UTERINE CYCLE

Evans and Swezy base their argument that ovulation may occur at any time in the menstrual cycle chiefly on the fact of the existence of some correlation between the endometrial and ovarian phases, and they advance criteria for inferring the condition of the ovaries from that of the endometrium. In the light of these they examine the data about monkeys given by Corner and the data about man provided by Schroeder. They state that "the presence of active growth in the endometrium without evidences of secretion or enlargement of the cells or great complexity in the glands" is "indicative of the ovulation or pre-ovulation period," while "a regressing endometrium normally occurs only after an ovulation period has passed." These generalizations, however, are open to criticism. In the descriptions on which they are based the terms regression, degeneration, and secretion are used as more or less interchangeable. For example, the "secretion phase of the endometrium" is said to occur in the cycle of the unmated rat after ovulation (that is, late oestrus) and to consist in "the so-called 'vacuolar degeneration' (Long and Evans, 1922)." Allen,[4] on the other hand—and here he confirms earlier observations which Evans himself made[16]—states that the secretory phase in the uterine cycle of the rat occurs in pro-oestrus. He writes that "extensive vacuolar degeneration and leucocytic invasion of the epithelium" occur during oestrus, the time of ovulation. This change seems to be true degeneration as the term is used in pathology, degeneration in which, as Allen points out, the basement membrane of the epithelium may be completely destroyed. Accordingly, there seems to be little justification for referring, as Evans and Swezy do, to this uterine change as secretion, in the same sense that they later use this term for the post-ovulation phase of the human endometrium—the stage in which the glands are numerous, complex, and distended with secretion.

A more serious criticism can be made against Evans and Swezy's criteria of ovulation. They do not apply to the rat, one of the types on whose endometrial changes they are said to be based. According to Allen, the pro-oestrous or *pre-ovulation* phase of uterine *secretion* in the rat "is unaccompanied by any evidence of growth of the surface epithelium or of the glands," whereas on the criteria advanced by Evans and Swezy there should be signs of cellular growth without any secretion during this pre-ovulation phase of the cycle. Since their criteria do not apply here, it is difficult to trust the conclusions that have been drawn by applying them to the descriptions given by Corner of the macaque uterus and by Schroeder of the human uterus. The fact that a "pre-ovulation" or "interval" endometrium has been observed at all times

* Since its publication, both Allen[2] and Hartman[11] in America have reviewed the evidence on which they based their own conclusions about the time of ovulation, while an account of Evans and Swezy's papers in the columns of the *British Medical Journal* resulted in a strong restatement by Shaw[25] of the generally accepted view that ovulation normally occurs about the middle of the cycle.

of the human and monkey menstrual cycle is evidence of no more than that the uteri concerned had not been subjected to the activity of the corpus luteum previous to their examination. The persistence of an interval endometrium throughout the cycle is what one expects to find in cycles in which ovulation does not occur. By itself it cannot be taken to suggest that ovulation may occur at any time. Evans and Swezy, however, claim further support—but very questionable support—for this view in the occurrence of desquamation (menstruation) from endometria in any stages of growth, maturity, or regression (Schroeder's data). This would be valid evidence for their view, provided that all the possible conditions of the non-pregnant endometrium were in a fixed temporal relation with one another, and if ovulation was associated with only one of them.

But the danger of deducing the condition of the ovaries from preconceived ideas of the corresponding picture of the uterus was clearly shown by the instance of the rat. The condition of the endometrium is at any moment determined both by its own sensitivity to the hormones to which it is subjected, and by their concentration in the blood stream. There are no data to show that these factors are constant for given stages of the cycle: our entire knowledge of the normal primate endometrial changes rests on qualitative differences. It is known that to some extent the condition of the uterine mucosa is always correlated with the ovarian cycle, and that there are three clearly recognized endometrial stages—disintegration, the follicular phase of repair and rest, and the luteal phase of progestational proliferation. It is also known that these phases may be subdivided further, again qualitatively. But there are no data to show any specific relation between a given ovarian stage (for example, ovulation, or beginning of luteinization, or solidification of the corpus luteum) and a particular condition of the endometrium (for example, a definite height, a definite number of glands to a given area, a definite number of mitoses in an oil-immersion field). It is very unlikely that there is such exact correlation, and it is therefore somewhat unreasonable to suppose that menstruation may be associated with any phase of the ovaries just because it may occur when the endometrium is in a condition of growth (that is, in an interval phase), or when it is in a condition of secretion (that is, from a luteal endometrium). The most that may be inferred from such premisses is that in the former case no ruptured follicle is present in the ovaries, and that in the latter the ovaries contain a functioning corpus luteum.

### TIME OF OVULATION

Evans and Swezy refer for support of their view that ovulation may occur at almost any point in the menstrual cycle to testimonial evidence that conception may follow intercourse at any time. As numerous workers have pointed out,[10] such testimony is inherently unreliable, and particularly so is that of the German women of the war period to which Evans and Swezy refer. Moreover, evidence of the same kind detailed by Ogino[21] is contradictory, and supports a view that the period of conception is only from the nineteenth to the twelfth days before menstruation (that is, ninth to sixteenth days of a twenty-eight days' cycle). The cases he describes are fewer than those mentioned in the German reports, but his investigation was more scientific.

There are only a few reliable ways of establishing the period of conception and the time of ovulation in relation to periods of menstrual bleeding; the main ones are (*a*) controlled matings of monkeys, (*b*) direct observation of the ovaries, and (*c*) observation of some readily measurable event that has been shown to be immediately related to some normal phase of the ovarian cycle.

Evidence of the first kind has been provided by Hartman.[11] Fifty-eight pregnancies have occurred in his colony of rhesus monkeys, conception in all cases taking place between the ninth and eighteenth days of the cycle. Evidence of the second kind has been collected by many workers[11 20], and it also goes to show that ovulation is confined to a small number of days in the middle of the cycle. Evidence of the third kind is also available. Knaus,[17] having established the fact that pituitrin has no contractile effect on the rabbit uterus when corpora lutea are present in the ovaries, has shown that a corpus luteum is almost certainly present in the human ovaries in the second half of a normal twenty-eight-day cycle, since injections of pituitrin have no effect on the uterus during that period, although they cause uterine contractions in the two weeks following menstruation.

But there is a more obvious and a readier sign of ovulation in the primate menstrual cycle to which Evans and Swezy do not refer—namely, the subsidence of sexual-skin swelling. Man and the rhesus macaque, the two types on which students have concentrated almost all their attention in attempts to elucidate the menstrual cycle, are only two of about 300 recognized species of Old World primates. Man has no sexual skin, and in the rhesus macaque it is comparatively little developed. When notice is taken of some of the more available of the remaining catarrhine primates (for example, baboons, mangabeys, other macaques), the sexual-skin phenomenon is the most conspicuous event of the menstrual cycle—far more conspicuous and dramatic in its cyclical occurrence than menstruation itself. As was explained above, it is an oestrous phenomenon, which varies little in its time relations amongst the many genera and species that exhibit it. In the baboon (genus Papio) the sudden decrease of the swelling about the mid-point of the cycle has been shown to synchronize, apparently closely, with ovulation.[29] The decrease in coloration which usually occurs in the rhesus monkey shortly after the middle of the cycle is also clearly correlated with the time of ovulation, determined by direct methods. There can be little doubt that the same relation applies in other species.

There is thus in the sexual-skin phenomenon a ready indication of the time of ovulation, which has yielded abundant evidence to support the conclusion, arrived at from many other lines of investigation, that ovulation both in man and in subhuman catarrhine primates normally occurs about the middle of the cycle.

## TWO MAIN PROBLEMS FOR SOLUTION

In the interpretation of the menstrual cycle, two separate but overlapping problems can be distinguished. The first concerns the physiological events which determine menstruation, and the second the relation between the rhythmical phases of the menstrual cycle and those of the oestrous cycles of lower mammals.

### PHYSIOLOGY OF MENSTRUATION

Menstruation has, at different times, been ascribed in turn to the action of each of the hormones that operate on the reproductive tract. What became known as the clinical view is that it is due to the cyclical cessation of action of the hormones of the corpus luteum. This theory has been generally rejected because it implies that the development and retrogression of a corpus luteum and the growth of a luteal or premenstrual endometrium are essential preliminaries to the destructive process, whereas in fact menstruation sometimes occurs without previous ovulation and the consequent formation of a corpus luteum and "premenstrual" endometrium.

A second theory of menstruation, associated with the name of Allen,[1] is focused on the effects of oestrin. It is well established that oestrin is mainly anabolic in function, and many workers hold that the degenerative uterine phase in the lower mammal at oestrus is due to the withdrawal of oestrin following rupture of the follicles.[4] Allen's view is that menstruation, too, is an effect of the removal of the follicular hormone, and he suggests that

in the primate the stimulus of oestrin is not removed at ovulation, as it is in the lower mammal, but that it normally continues until the next menstruation a fortnight later.

There is enough evidence in the occasional persistence in some primate species of a certain amount of sexual-skin activity through the greater part of the cycle to support his belief in the continued activity of oestrin after ovulation, but he ascribes its continued secretion to the corpus luteum,[3] a view which some workers[22] regard as untenable.

The main grounds upon which this explanation of menstruation is based is the uterine bleeding which follows double ovariectomy or cessation of injection of oestrin into ovariectomized monkeys. Hartman's recent experiments[12] suggest, however, that this is not primarily an effect of the ovarian secretion, but of the secretions of the anterior lobe of the pituitary. He found that uterine bleeding did not follow the cessation of oestrin injections into a monkey whose pituitary gland had been removed. Hartman and his co-workers also discovered that administration of extracts of the anterior lobe to a monkey results in bleeding "whether the animal be normal, sick and amenorrhoeic, castrated or hypophysectomized, old or young." The bleeding thus produced is unaccompanied by growth or congestion of the uterus and ovaries, and it was therefore tentatively concluded that menstruation "is due to a hormone elaborated by the anterior lobe, separate and distinct from that of growth, follicle stimulating (Smith and Engle), luteinizing (Evans and Simpson), or thyroid activating (Smith ; Crew and Wiesner)." Although these experiments, as Hartman hopes, help to raise the menstruation problem from the realm of theory, they are unfortunately an insufficient basis for this conclusion, and in a somewhat similar series of experiments another observer, Saiki,[24] did not obtain confirmatory results. For example, injection of hypophyseal extract into several spayed, immature rhesus monkeys failed to stimulate uterine bleeding, while one of the animals used in this experiment subsequently bled after the cessation of a course of injections of oestrin. It was also found that the bleeding which would normally follow injection of hypophyseal extract could be postponed by administering oestrin immediately after the injections of anterior lobe were stopped. As a result of his experiments Saiki concluded that it is unnecessary to postulate the existence of a separate anterior lobe hormone as the direct cause of menstruation, but that "bleeding is dependent upon the presence of the ovary, and the uterine changes follow the induction by the hypophyseal extract of some alteration in the ovary."

Hartman began his investigation of the pituitary-uterus relation impressed with "the inadequacy of the theory which sets up the absence of something as the causative factor" in menstruation, and as a result of his observations he concluded that "the cause of menstruation is an *active* one"—namely, the special hormone of the anterior lobe. Saiki's experiments, however, and indeed those also of Hartman and his co-workers on intact monkeys, clearly indicate that it is the withdrawal of the stimulus of the anterior lobe that results in uterine bleeding. Haemorrhage does not occur at the time the pituitary substance is administered, but follows after an interval of about a week.

Although in the light of these two series of experiments it is difficult to draw strong conclusions as to the nature of the physiological events which determine menstruation, the most reasonable point of view to adopt at present seems to be as follows. The anterior lobe of the pituitary controls the ovarian cycle and stimulates the production of ovarian hormones. Its effect is cyclically interrupted or decreased at intervals of somewhat less than four weeks. The ovarian secretions produce changes in the endometrium, and when their action is interrupted or decreased, subsequent to the withdrawal of the stimulus of the anterior lobe, the endometrium degenerates and menstruation ensues. Menstruation itself seems, therefore, to be immediately due, in cycles without ovulation, to the withdrawal of the stimulus of oestrin alone, and, in cycles with ovulation, to the withdrawal of both oestrin and luteal secretions. It is necessary to postulate that the withdrawal of luteal secretions is one of the factors responsible for endometrial degeneration, because of the existence of such degeneration at the end of the luteal phase of obviously biphasic cycles—for example, the oestrous cycle of the dog. It is very unlikely that the latter degeneration is due to the withdrawal of oestrin, and unless it is due to some unknown factor it is probably an effect that follows the degeneration of the corpus luteum. Unfortunately this hypothesis cannot be readily tested experimentally, for up to now it has only been possible to induce luteal effects in the endometrium by previously sensitizing it with oestrin.[14 15] Bleeding that may follow such procedure cannot logically be ascribed to the withdrawal of either hormone separately.

### RELATION BETWEEN OESTROUS AND MENSTRUAL CYCLES

This inquiry into the physiological events which underlie menstruation has constantly touched on the problem of the relation between the rhythmical phases of the menstrual cycle and those of the oestrous cycle. Granted that there is some connexion between the two (and no one, in fact, doubts this), the relations that are possible seem to be as follows. The first is that the menstrual cycle is practically identical with the oestrous cycle in the distribution of its two phases. According to this view, which has been advanced by Hartman,[9] the end of the pre-ovulation (follicular) phase is marked in the primate, as in the dog, by uterine bleeding, and, in fact, Hartman has recovered microscopic amounts of blood, which he believes to be uterine in origin, in vaginal smears from the rhesus monkey between the seventh and eighteenth days of the cycle. There is no proof, however, that this blood is uterine, while on the other hand different workers have shown that a few erythrocytes occur in vaginal smears of subhuman primates almost at any time in the cycle.[21 26] There are two other serious objections to Hartman's hypothesis—the first that histological studies have failed to show endometrial degeneration in catarrhine primates during the interval phase, and the second that his view implies that follicular effects are confined entirely to the pre-ovulation phase of the cycle, whereas they are not.

A second possible relation is that the menstrual cycle represents only one of the two phases of the oestrous cycle.* Thus the "clinical" view of menstruation emphasizes only the luteal phase. As shown above, the fact that menstruation may occur without previous ovulation and the formation of a corpus luteum is strong evidence against this view. Even more striking evidence is the fact that a very pronounced follicular phase exists in primates with sexual skins. The view that the menstrual cycle consists only of the follicular phase is implied by the hypothesis that menstruation is equivalent to pro-oestrous degeneration, a view held by Heape.[13] This explanation was generally rejected some twenty years ago, when the biphasic nature of the oestrous cycle was revealed, but recently it has also been disproved experimentally by Meyer and Saiki.[19] Nevertheless it is possible to find some truth in this particular hypothesis, since cycles in which ovulation does not occur may be regarded, from the point of view of homology, as consisting only of a prolonged follicular phase, while the menstruation which ends them might be considered to represent pro-oestrous degeneration.

The third possible relation between the menstrual and oestrous cycles is that both consist of two phases, but in different combination. This view was originally put forward by Marshall,[18] but his statement

* It may be noted that Wiesner[25] refers to the menstrual cycle as monophasic to signify that a period of destruction does not intervene between the pre- and post-ovulation phases of endometrial growth. Here, however, "one phase" is used in the sense that the endometrium is subjected either to the follicular hormone alone, or, to the luteal hormones alone.

of it implies that menstruation represents the breakdown of the pro-oestrous uterine growth which heralds the succeeding ovulation, combined with (in his own words "telescoped into") the breakdown of the pseudo-pregnant endometrial growth which followed the preceding ovulation. This, however, means that the follicular phase, or pro-oestrus, comes to an end at the very beginning of a menstrual cycle, and that an interval of at least ten days elapses between the end of the pro-oestrous destruction and the ovulation which follows. Actually the follicular phase, or pro-oestrus, continues at least throughout the earlier half of the menstrual cycle, as the changes in the sexual skin show.

In spite of the objections to Marshall's hypothesis, the view that the menstrual and oestrous cycles both consist of two phases, but in different combination, seems to my mind the most reasonable explanation of the menstrual cycle, and in the light of facts revealed in the past few years it is possible to state it in a way not open to the criticisms to which Marshall's interpretation is exposed. As I see it,[29] the main difference between the menstrual cycle of the primate and the oestrous cycle of the lower mammal lies in the distribution of their respective follicular phases.* In an animal like the bitch, the follicular phase ends with oestrous degeneration, which separates it from the ensuing luteal phase, and the endometrium of pseudo-pregnancy is built up, under the influence of the luteal hormones, from an endometrium that has degenerated at the time of ovulation. In the primate, on the other hand, though the main effects of the oestrous phase occur in the earlier half, they are prolonged over the entire cycle, and in cycles with ovulation, pseudo-pregnant growth is superimposed upon a persisting pro-oestrous endometrium maintained apparently by the follicular hormone. The menstruation which ends such cycles may be taken to represent both pro-oestrous and pseudo-pregnant degeneration.

As I have stated elsewhere,[29] if this interpretation is correct, the differences in sexual behaviour between primates and lower mammals largely reflect their different sexual physiological mechanisms. The mating or oestrous phase of the lower mammal is generally brief, whereas that of the primate is diffused over the entire cycle, coinciding with the continuous action of the follicular hormone, but varying in frequency according to the varying degrees of activity of that hormone. In their sexual behaviour, as in many other features, primates thus fail to exhibit an apparent specialization which characterizes all other orders of mammals.


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* Using the term to mean the period in which the follicular hormone (oestrin) functions.

# HEADACHE PRODUCED BY HISTAMINE AND ITS MECHANISM*


BY

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A factor that has always hindered the understanding of headache has been the difficulty of studying it under well-defined circumstances. It seemed to us that a step forward could be made if, by simple means, we could produce headache at will. From its use in other investigations we knew histamine to be suitable for the purpose, and the following is a brief preliminary account of observations made with this substance. We have worked as far as possible on normal subjects, and have always injected the histamine intravenously, thus ensuring the quantity entering the circulation in a given time.

The effects of histamine may be divided into those that are objective, largely vascular, and those that are subjective, of which headache is the most striking, and the only one which concerns us here; these two effects are not simultaneous, the objective changes preceding the subjective. Following an intravenous injection of 0.1 mg. histamine acid phosphate (the dose usually employed by us) nothing happens for an interval during which the substance is travelling to the systemic capillaries. At about the twentieth second a metallic taste is felt in the mouth, and simultaneously the face flushes and systolic and diastolic blood pressures begin to fall. If lumbar puncture has been performed, the cerebro-spinal fluid pressure is found at this time suddenly to rise. This rise in cerebro-spinal fluid pressure has been recently observed by Weiss, Lennox, and Robb,[1] who find it to be accompanied by cerebral vaso-dilatation; for after injecting histamine they observed flushing, bulging, and increased pulsation of a human brain exposed at operation. The changes in facial colour, in arterial blood pressure, and in cerebro-spinal fluid pressure progress for a further period of ten to twenty seconds, and then begin to pass away. The total duration of the facial flush is about three minutes, of the rise in lumbar pressure about one and a half minutes, and of the fall of arterial pressure about thirty seconds.

Headache begins about forty seconds after the onset of vaso-dilatation, when the facial flush is just beginning to fade, when arterial pressure is at its resting level or above, and when lumbar pressure is falling from its peak value. It reaches a maximum about half a minute after its onset, begins to lessen about a minute later, and finally disappears after it has been present for six to ten minutes. The headache is at first conspicuously throbbing in character, waxing and waning with the pulse beat; as time passes, it tends to become continuous, and is not

* A preliminary communication of work done on behalf of the Medical Research Council.

influenced by the pulse during the last three to four minutes of its course. The ache begins in the forehead, and, while remaining most intense there, tends, at its height, to invade the temples, the convexity of the calvarium, and occasionally the occipital region.

Thus the results of injecting histamine intravenously appear to be divisible into two phases. The first is that in which vaso-dilatation begins and progresses to a maximum ; this phase is not accompanied by headache. The second phase, that of the decline of vaso-dilatation, is marked by the onset and progressive development of headache, which persists, though lessening, when all objective evidence of vaso-dilatation has disappeared. The beginning of headache appears, therefore, to be related to the decline of vaso-dilatation. That this is not fortuitous is shown by the following observations. While the histamine headache is at its height a second injection of the substance quickly abolishes the headache, which returns about twenty seconds later. A similar transient relief of histamine headache is produced by amyl nitrite. Again, if, instead of making a single injection of histamine, the substance is infused into a vein at a steady rate for long periods, then in the majority of subjects, but not in all, headache does not appear so long as the infusion is continued, but begins about thirty seconds after the infusion is stopped.

From the facts already described we are able to dispose of several possible explanations of the histamine headache. Thus the headache is not due to simple rise of intracranial pressure. This is shown by the lack of coincidence between the rise and fall of lumbar pressure and the onset and disappearance of headache. Moreover, if, when the headache is fully developed, the jugular veins are compressed in the neck, a rise in lumbar pressure occurs, but simultaneously headache is relieved, to return when compression is stopped. The same relief is obtained by artificially raising the intracranial pressure in other ways. It is also clear that headache does not directly result from an expansion of the brain due to dilatation of its vessels, for the headache is absent when this process is at its height, appearing only as vaso-dilatation subsides. The curve of intracranial pressure recorded from a cranial defect follows the same course as does the lumbar pressure curve in response to an injection of histamine, indicating that pressure is raised both above and below the tentorium. Thus on the two sides of the tentorium no pressure difference is established which would tend to stretch this membrane.

There are, however, some indications of where and how the headache arises. That the headache arises in the meninges is suggested by the observation that it is always very greatly increased by a rapid oscillatory movement of the head about either a horizontal or a vertical axis. In such movement, the brain, poised as it is in a bath of cerebro-spinal fluid, must tend to oscillate out of phase with the calvarium, and hence to strain the meninges, which separate it from its rigid case. It has already been pointed out that raising intracranial pressure relieves an established headache ; a similar effect is produced by artificially lowering the arterial blood pressure. These facts suggest that the headache arises from stretching of the walls of the cerebral arteries or the tissue in their immediate neighbourhood, for the headache is inhibited either by a rise of pressure outside these vessels or by a fall of pressure within them. Entirely consistent with a simple mechanical effect, such as stretching of a sensitive meningeal structure, are the sudden rise in the intensity of the headache which occurs with the pulse beat, the very quick relief effected by raising the intracranial pressure, and the striking effects of shaking of the head. The outstanding fact for explanation is that while the development of the mechanical stimulus is related to vaso-dilatation, it long outlasts the objective signs of this process. There seems to be more than one way in which this may be explained. First, the dilator action of histamine on the cerebral arteries may conceivably outlast its action on the minute vessels. If this were so, then the loss of tone of the cerebral arteries might not at first result in their expansion, since this would be prevented by the rise of pressure outside these vessels and the fall of pressure within them ; the expansion of the arteries would occur as intracranial and arterial pressures returned to their normal levels. On this hypothesis over-expansion of the cerebral arteries would be the cause of histamine headache. In the second place, cerebral vaso-dilatation may redistribute cerebro-spinal fluid in a manner that is not immediately reversible when vaso-dilatation subsides. This redistribution of fluid might be supposed, if unbalanced by vaso-dilatation, to set up a state of tension in the vascular meninges and thus to produce headache. It is impossible in the present state of knowledge to decide which of these hypotheses, if either, is correct.

The present account of our observations has been made as brief as possible and is in many ways incomplete. It is hoped, however, that enough has been said to show that one variety of headache has quite definite attributes, and that it may be ascribed to a state of tension set up in the meninges. We do not claim, or indeed believe, that all headaches arise in this way ; but before this question can be answered it will be necessary to define more closely the attributes of the headaches peculiar to different diseases. Although this work is in progress it is too early to speak of it here.

REFERENCE

[1] Weiss, Lennox, and Robb: *Arch. Intern. Med.*, 1932, xlix, 360.

## THE USE OF A MODIFIED DOUBLE THOMAS FRAME IN THE TREATMENT OF THE PARALYSES OF POLIOMYELITIS

BY

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The epidemics of poliomyelitis which recurred in Victoria each summer and autumn from 1927 to 1931 left behind them annually from eighty to two hundred persons wounded by the lesions of the disease. Paralysis had usually reached its maximum within ten or fourteen days from the onset. It was realized that the future of these patients depended upon two factors:

1. The degree and extent of the initial destruction of the anterior horn cells of the spinal cord, and

2. The perfection of the detail of the care available from the hour of the onset of paralysis.

The teachings of Hugh Owen Thomas, C. Fayette Taylor, and Sir Robert Jones warned us that deformities were not essential sequelae of the disease, but were in every instance preventable, and that the natural tendency towards recovery of function would be handicapped if measures were not taken to protect partially paralysed muscles from the influence of two factors which inevitably operated in uncared for cases, after the disease has done its worst. These are: (*a*) the functional disability which follows continued stretching of partially paralysed muscles and the development of contractures in muscles favoured by prolonged relaxation, and (*b*) the influence of fatigue.

### PRINCIPLES INVOLVED

The first principle—that if a muscle is to have the opportunity of achieving the maximum recovery of which it is capable the bones on which it acts should be maintained in such a position that the muscle is continually relaxed—is fundamental to the treatment of paralysed cases. The deformities which develop in neglected cases of poliomyelitis, namely, flexion of the hips and knees, scoliosis, dropping of the fore part of the feet, adduction and internal rotation of the shoulders, are largely determined by the positions habitually assumed—that is, by propping up the head and shoulders with pillows, placing the pillow under the knees, and by the influence of gravity. This is evident when a paralysed patient is allowed, soon after the onset of the disease, to sit in a chair. In such a case the hip flexors and hamstrings—the muscles favoured by relaxation—shorten to contractures, and the patient, when he tries to walk, finds that he is no longer the shape of an erect human, but has grown to the shape of his chair. As the aim of treatment is the return of the patient to the shape and power of a normal human of good posture, it is wise policy to maintain him in that position, and thus to favour by relaxation the muscles of greatest economic importance—the hip extensors, the quadriceps, the muscles of the trunk.

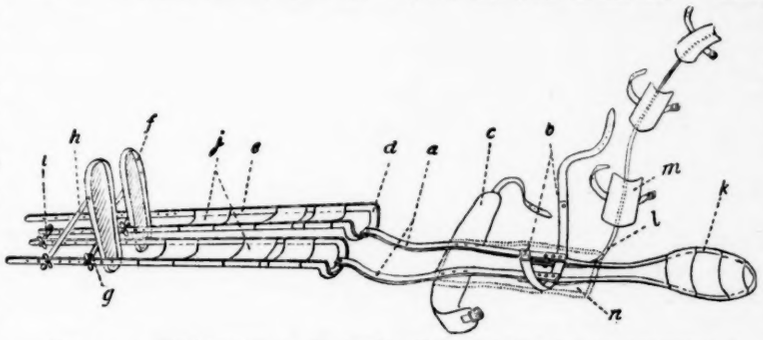


FIG. 1.—A modification of the double Thomas frame for the treatment of the paralyses of poliomyelitis. (Note: The frame may be lengthened at either end, and the position of the foot-pieces may be adjusted.) *a*, Vertical stems; *b*, chest wings; *c*, pelvic grip; *d*, thigh support; *e*, leg bar; *f*, foot-piece; *g*, transverse rod which carries the foot-piece; *h*, stay-piece; *i*, connecting bar between the medial leg bars; *j*, supporting troughs; *k*, head-piece; *l*, rod of malleable iron for arm-piece; *m*, trough for upper arm; *n*, felt pad.

While it is easy to devise splints of plaster-of-Paris or wire outlines, such as the Osgood splint, to relax the dorsiflexors of the foot and the quadriceps, and while an adult may be persuaded to maintain a given position when restrained by sand-bags or pillows, it was found that such splints were not sufficient for children; for, if the muscles of the hip were involved, the lower limbs, by their weight, would fall into outward rotation, and the child would wriggle into the sitting position and thus favour the hip flexors and stretch the important hip extensors. Moreover, fatigue in the affected quadriceps and foot muscles could not be prevented, for the child would try to stand or crawl on the splint applied. As over 70 per cent. of the paralysed cases had some involvement of the abdominal muscles it was essential, in order to reduce the tendency to the development of scoliosis, to maintain the trunk in a position of good posture while the abdominal muscles had the opportunity of recovery by protection from stretching afforded by a well-fitting corset. When the muscles of the shoulders were simultaneously involved the application of any of the abduction splints described tended to induce asymmetry of the trunk when the child was allowed to sit or stand.

### THE DOUBLE THOMAS FRAME

To overcome these difficulties encountered in the splinting of some of the cases of the 1925 epidemic, the double Thomas frame was used. This ensured relaxation of the hip extensors and the quadriceps, held the hips in the optimum degree of abduction and rotation, and allowed for fixation of the trunk in a straight position. A foot-piece was attached to a prolongation of each vertical stem, thus protecting the dorsiflexors of the foot. Gradually it became evident that modifications were necessary to obviate the expense and inconvenience of the frequent adjustments required by the growth of the child, and to allow of simpler variation of the position of the feet as the varying recovery rate of the muscles determined. Moreover, when it was necessary, because of the relative weakness of the hip abductors, to hold the lower limbs away from one another, this frame did not prevent angling at the knees, by stretching of the internal lateral ligaments. The prolongation of each vertical stem to the foot-piece in some cases resulted in pressure atrophy of the calf muscles. To overcome these disadvantages the frame has been gradually modified, and at present it consists of the usual chest wing and vertical stems, but each stem ends at the middle of the thigh, where it is riveted to a transverse thigh support. One end of a bar of metal is welded or riveted to each extremity of the thigh support. Each of these four leg bars extends to a point four inches below the level of the foot. Holes are bored, at half-inch intervals, in their distal four inches. Troughs of strong material pass between each pair of bars to support the knee and leg, as in the Thomas hip splint used for fracture of the femur.

*Foot-pieces.* — The foot-pieces, with their lateral flanges, are made of sheet aluminium from tracings of the feet. A rod of metal is secured transversely to the centre of the plantar surface of each foot-piece. Each end of this rod is passed through a hole in the leg bar and secured by a butterfly nut. By passing this rod on each side through the next distal pair of holes the frame may be lengthened by half an inch, the buttocks still resting in the curve designed to hold them. Inversion or eversion of the feet can be obtained by passing one end of the rod which carries the foot-piece through a hole in one leg bar more distal on one side than on the other. The required degree of plantar flexion may be obtained by altering the angle of a stay-piece—a bar of metal which passes from the lateral margin of each foot-piece to the lateral leg bar, where a screw secures it to any hole selected.

*Pelvic Grip.*—A band of leather, four inches wide, is attached to each vertical stem posteriorly, proximal to the buttock curve. It passes below the anterior superior spine, gripping the pelvis. Its attachment to a webbing band on one side and to a buckle on the other completes the circle around the pelvis.

*Arm-pieces.*—A rod of iron is secured by a flattened metal prolongation to any hole selected of those bored at intervals, through the cranial end of the vertical stem. Covered, moulded troughs of sheet aluminium are secured to the rod to provide support for the arm, the forearm, wrist, and hand, on their dorsal aspect. The screws which secure the prolongation to the vertical stem will also secure the prolongation of the metal outline of the head support. To this outline is sewn the leather or webbing which supports the head. When the cervical muscles of one side are involved it is possible to hold the head in the mid-position by attaching an outrigger to the head-piece to prevent torticollis. When the muscles which abduct and rotate the shoulders are involved, arm-pieces are attached to the vertical stems and the degree of rotation required is determined by the relative strength of the internal and external rotators. As this varies from

time to time it is often necessary to modify the position of the arm-pieces, and the metal should be malleable enough to allow this to be done by hand. The patient shown in Fig. 2 had stronger internal rotation than external rotation of the shoulders ; therefore the external rotators were relaxed by the splinting.

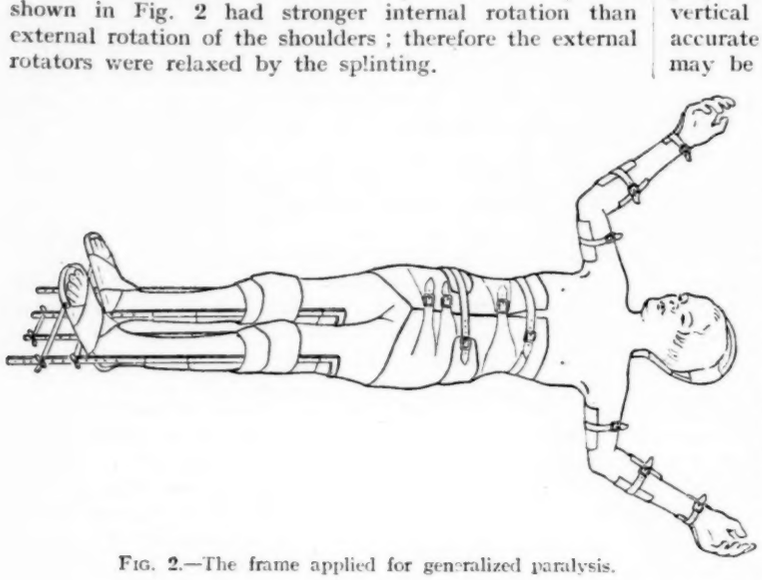

FIG. 2.—The frame applied for generalized paralysis.

### THE FRAME IN USE

If frequently supervised a mother readily learns to care for a child in such a frame. Instruction should be given in the method of applying bandages to hold the knees out and the ankles in without inducing rotation, and thus to prevent the tendency to genu valgum which, in neglected cases, often follows involvement of the quadriceps extensor when the tensor fasciae femoris has escaped. By the adjustment of bandages pulling to the leg bars it is possible gradually to correct any pre-existing tendency to bow-legs or knock-knees. To anticipate a genu recurvatum she should be taught the importance of maintaining at the correct tension the slings which support the knees.

The mother should recognize that the child is not placed correctly in his frame unless the line between the two superior iliac spines makes a right angle with the central vertical line of the trunk, and she should detect and correct any tendency to hitch the pelvis on one side

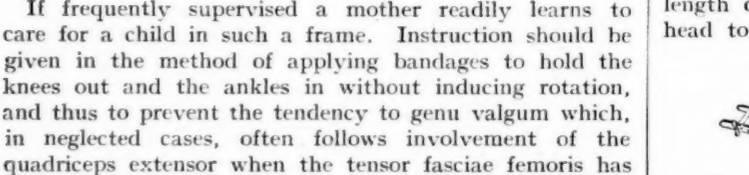

FIG. 3.—The frame applied. (The corset is applied before the patient is placed in the frame. Note that, when rotated through a right angle, the posture is that of a normal, erect person. The common deformities are prevented.)

when the iliac crest of that side approximates more closely to the costal margin than does the crest of the other side.

When the essential muscles—the hip extensors and the quadriceps—have escaped or recovered completely, it is possible, if the hip flexors or hamstrings are paralysed, to favour their recovery by relaxation. Fig. 4 shows a modification of the frame to relax the abductors of both hips, the flexors of the right hip and the hamstrings on the left, when the right hip extensors and the left quadriceps are normal but the left hip extensors are still paralysed and therefore demand relaxation.

With these modifications the double Thomas frame has been as useful in facilitating the splinting of the victims of epidemics of poliomyelitis as the Thomas splint proved to be in warfare. The frame can be made cheaply. Most of it may be prepared as stock before an epidemic occurs, only the vertical stems, chest wings, and foot-pieces requiring accurate fitting. When the frame is no longer required it may be re-covered and used again for another child of approximately the same size. Alterations demanded by growth or by the variation in the rate of recovery of affected muscles may be carried out by the doctor or physiotherapeutist equipped with a screwdriver and " King Dick." It is an advantage to have the screws which anchor the head-piece and arm-piece of the " Meccano " size ; these are often obtainable in the patient's home. In Victoria many requests for help in splinting were received from doctors in outlying districts, and from simple tracings the frame could be made, leaving the finer adjustments to the doctor when the frame was fitted to the child. The frames are light, and a child may be carried about in his frame while the desired position is maintained.

### MEASUREMENT AND FITTING

To make the frame a mechanic requires tracings of the chest wing, thigh wing, vertical stem, the arms, and feet, and measurements of the total length of the patient, the distance from the top of his head to the chest wing, the circumference of the chest

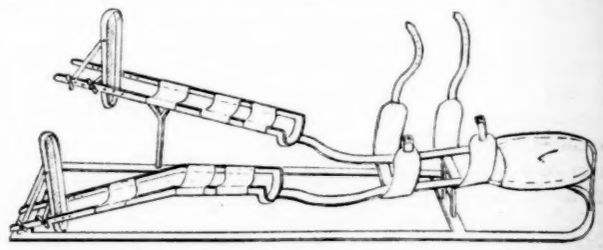

FIG. 4.—The frame modified to relax the abductors of both hips, the right hip flexors, and the left hamstrings.

and pelvis, and the distance between the posterior superior iliac spines. The tracing of the chest wing is obtained by moulding a strip of lead or aluminium to the dorsal two-thirds of the chest, one inch below the angle of the scapula. The outline of the lead, traced on paper, gives the mechanic the pattern for the metal of the chest wing. The circle is completed by webbing and a buckle. Similarly, the pattern for the vertical stem is taken from a lead strip moulded to the back, extending from a point an inch below the angle of the scapula to the mid-point of the thigh when the patient is lying on his side, with hips extended, and steadied to prevent rotation of the trunk. The distance between the vertical stems should be such that the posterior superior iliac spines will lie between them and miss their pressure. The tracing for the thigh support should conform to the outline of the dorsal two-thirds of the thigh at its mid-point. For infants it is well to use non-corrosive metal for the portions of the splint likely to be soiled. If iron is used this part may be electro-plated, or an additional covering of waterproof tissue can be carefully applied. The chest wing, vertical stems, and thigh supports are neatly covered with felt and basil leather. The other metal parts of the frame are painted with " duco " or aluminium paint. When the arms are normal, shoulder straps of webbing are usually necessary to restrict all attempts to sit up. When the child undoes the buckles of the shoulder straps or chest wings one or two padlocks and keys are usually effective. The corset may be anchored to the frame by

additional webbing bands. It is often necessary to overcome a tendency to hitch the pelvis on one side by the traction of webbing attached to the fitting pelvic portion of the corset to the foot of the frame. When it is probable that the abductors of one hip will need temporary relaxation, it is economical to insert a joint in one vertical stem, as in the Jones abduction frame, when the bar which joins the medial leg bars must be adjustable.

The metal which has been used in the frame is given below, but heavier metal, as advised in Thomas's original description, is necessary to restrain very active, heavy children.

DETAILS OF CONSTRUCTION

| Part of Splint | Material | Under 2 Years | 2 to 6 Years | Over 6 Years | Thomas's Original Description |
|---|---|---|---|---|---|
| | | Inches | Inches | Inches | |
| Chest wing ... | Galvanized iron under 6<br>Spring steel over 6 | $1 \times \frac{1}{16}$ | $1 \times \frac{1}{16}$ | $1 \times \frac{1}{16}$ | Hoop iron $1\frac{1}{2} \times \frac{1}{8}$ |
| Vertical stems... | Mild steel | $\frac{5}{8} \times \frac{1}{8}$ | $\frac{3}{4} \times \frac{3}{16}$ | $\frac{3}{4} \times \frac{3}{16}$ | Malleable iron $\frac{3}{4} \times \frac{1}{4}$<br>Adult $1 \times \frac{1}{4}$ |
| Thigh supports | Mild steel | $\frac{5}{8} \times \frac{1}{8}$ | $\frac{5}{8} \times \frac{1}{8}$ | $\frac{3}{4} \times \frac{3}{16}$ | $\frac{5}{16} \times \frac{1}{8}$ |
| Leg bars... ... | Mild steel | $\frac{5}{8} \times \frac{1}{8}$ | $\frac{5}{8} \times \frac{1}{8}$ | $\frac{3}{4} \times \frac{3}{16}$ | — |

# OPHTHALMOLOGY IN GENERAL PRACTICE*

BY

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The chief aim of medical training is to produce efficient general practitioners for the service of the community. An overburdened curriculum which tends more and more to fi'l the mind of the student with encyclopaedic vagueness rather than circumscribed precision, to make a memorizing machine rather than a thinker, is ill calculated to achieve its object. Of the special subjects ophthalmology is so advanced, progressive, and vast that it has become more than a whole-time job for the best of us. It has been said that the general practitioner ought to know ophthalmoscopy because some general disorders produce changes in the fundus. Woe be to the patient who has to wait for the detection of his ailment until his doctor discovers pathological change in the fundus! For our help to be efficient, disease must be recognized at its onset. Minute ophthalmoscopic abnormalities call for the expert eye, and now and then escape notice even with the pupil dilated ; in some cases they can never be seen through the undilated pupil. Ophthalmoscopic signs due to general disorders appear mostly in the decades of life when it is risky to use mydriatics, and also late in the course of the disease. Apart from the impracticability of finding time for it, therefore, the careful routine examination of the fundus in each case is of very doubtful value to the general practitioner. He is asked to learn refraction as though it consisted just in prescribing glasses that give the patient normal acuity of vision in each eye. To do justice to refraction a sound knowledge of ophthalmology is required ; one has to assure one's self that there is no disease in the eye before deciding that correcting the error of refraction is all that is needed. Each case has to be judged on its own merits, and considerable experience, skill, patience, and time are essential to deal with it satisfactorily. If the student intends to become a general practitioner the time and trouble involved in getting a vague smattering of refraction and ophthalmoscopy is ill spent. Ophthalmic surgery is by general consent the province of the specialist.

* Read before the Section of Ophthalmology at the Centenary Meeting of the British Medical Association, London, 1932.

### CONGENITAL DISEASES OF THE EYE AND BIRTH INJURIES

The work of the general practitioner is mainly preventive, that of the specialist mainly remedial, particularly in regard to the eye. The aetiology of congenital abnormalities of the eye is obscure, but if steps are taken to ensure the mental and physical well-being of the expectant mother during the whole period of gestation, the chances are that their occurrence will be minimized, especially if care has been taken to deal with, and eliminate, venereal diseases where present in the parents. The latter precaution safeguards the infant both from congenital syphilis and from ophthalmia neonatorum. To save the eye from birth injuries, which range from trivial contusions, ecchymosis, and abrasions of the lids and globe to complete destruction of the eye, it is essential that difficult labour be prevented by timely induction in cases of contracted pelvis, by correction of malposition of the foetus, and by avoidance of instrumental delivery whenever possible. During the passage of the infant through the genitals the eyes remain as a rule well closed, so that only the lids are contaminated externally. To prevent ophthalmia neonatorum, therefore, it is essential to remember to leave the eyes alone until the rest of the body has been washed in the bath. After drying the baby, the lids should be carefully wiped with a clean wet swab without opening the eyes ; the lids should then be separated and a drop or two of 1 per cent. silver nitrate solution instilled into each conjunctival sac. The importance of keeping the hands free from genital contamination should be impressed not only on the parents, but also on the nurse, who has been known to be the source of infection. As a further precaution a couple of drops of a 10 per cent. solution of protosil (Parke, Davis and Co.) may be instilled into the eyes thrice a day for a week or ten days.

### OPHTHALMIA NEONATORUM

Ophthalmia neonatorum is a general term applied to conjunctival inflammation of the newborn. Unless proper treatment at home is really practicable, these cases are best sent at the very outset to specially equipped clinics. If it is decided, however, to treat the case at home the two guiding principles are: (*a*) to take scrupulous care not to traumatize the cornea in the slightest in the process of treatment ; and (*b*) to maintain the general condition of the mother and child at its best. To achieve these ends it is preferable not to let the mother have the responsibility and anxiety of carrying out the treatment. If the inflammation is mild, instillation of a couple of drops of 1 per cent. solution of silver nitrate into each eye once a day, followed by instillation of 10 per cent. solution of protosil every two or three hours will do. The irrigation of the conjunctival sac to wash out the discharge and the instillations are best done before each feed ; in this way the feed comforts the child and its sleep between feeds is not disturbed—conditions of at least as much importance in maintaining the resistance of the cornea to the invading micro-organism as the local treatment. The case should be carefully watched, and as soon as the inflammation shows signs of becoming severe 1 c.cm. of unadulterated cow's milk, boiled for five minutes and cooled to body temperature, should be injected into the buttock under aseptic precautions. If necessary, the injection may be repeated once or twice at intervals of twenty-four to forty-eight hours. This masters the inflammation better than anything else, especially where the gonococcus is concerned. Protecting

goggles should be worn when carrying out the local treatment, and the use of instruments such as hooks and lid retractors should be avoided whenever possible. For irrigating, potassium permanganate 1 in 5,000 freshly prepared every day, boric acid 2 in 100, or sodium chloride 1 in 100, should be used.

### Gonorrhoeal Ophthalmia of the Adult

In contrast to ophthalmia neonatorum, which is generally mild, gonorrhoeal conjunctivitis of the adult is almost invariably very severe and dangerous. In the former, as a rule, both eyes are simultaneously affected, whereas in the latter, oftener than not, only one eye is involved at the outset. The first thing to do is to cut off the unaffected eye from contamination by fixing a Buller's shield over it. Five c.cm. of milk should then be injected into the buttock and the case removed with the utmost expedition to an institution specially equipped for its treatment. Pending removal, local treatment on the lines indicated for ophthalmia neonatorum should be carried out, and further milk injections of 7 c.cm. and 10 c.cm. given at intervals of thirty-six to forty-eight hours.

### Conjunctivitis, Iritis, and Primary Congestive Glaucoma

At the outset, it sometimes puzzles even the expert to distinguish between them. It is helpful to remember that in the first decade of life it is practically always conjunctivitis, in the second and third iritis and iridocyclitis are not infrequent, and from the fourth decade onwards it may be any of the three. Focal illumination with a lens and careful examination with a loupe is very helpful in detecting minute posterior synechiae and precipitates on the back of the cornea. Severe pain in and about the eye radiating to the head, ears, and jaws, and sometimes accompanied by vomiting and fever, is, as a rule, characteristic of acute congestive glaucoma and sometimes of iritis. If the diagnosis is at all doubtful, mydriatics in particular should be avoided and the specialist called in. But if the specialist is not immediately available, a brisk purge, hot moist fomentation to the eye, leeches to the temples, hypodermic injection of morphine, stoppage of all stimulants, including coffee, tea, and tobacco, and a low diet are helpful measures that the general practitioner can take.

Acute catarrhal, follicular, and eczematous conjunctivitis are the usual forms occurring in children. The first is contagious, and steps should be taken to prevent its spread. Cleaning the eye free of discharge with sodium bicarbonate lotion (2 in 100) and putting 5 per cent. protosil ointment into the conjunctival sac morning and evening for about a week often suffices to get the eye well. In inflammatory conditions of the eye, goggles with side protection are very comforting, and keep off wind and dust and minimize glare. Follicular conjunctivitis is characterized by translucent pinhead-sized elevations in the palpebral conjunctiva which may be few or many, and calls for treatment if symptoms are present. One-quarter per cent. zinc sulphate ointment used for several weeks will often cure the symptoms and sometimes the follicles. This ointment is a specific in diplo-bacillary conjunctivitis, which generally occurs in adults and often shows marked redness and irritation at the canthi, hence angular conjunctivitis. Eczematous conjunctivitis, with or without phlyctenulae—small solid nodules of infiltration elevated in the bulbar conjunctiva and nearly flat in the cornea—is a disease due to malnutrition, dirt, and lack of fresh air and sunshine. The children are often scrofulous, suffer from adenoids and enlarged tonsils, exhibit patches of eczema on the face and elsewhere, and are sometimes verminous. So long as the general condition of the patient remains below par the attacks of conjunctivitis are liable to recur. Correction of errors of hygiene is therefore of the first importance in this disease. Cod-liver oil with malt extract and iodide of iron internally, and 1 per cent. calomel or yellow oxide of mercury ointment locally, should be exhibited.

### Foreign Bodies in the Eye

Foreign bodies may lodge themselves in the conjunctival sac, on or in the sclera and cornea, or anywhere in the interior of the eye or orbit. Whenever a patient has the history that something went into the eye while chiselling, hammering, etc., even though no abnormality of the eye is detected, the case should be referred without delay to the specialist ; oftener than not, the metal spicule has penetrated the eye. Sometimes a small foreign body which falls or gets blown into the eye lodges itself in the subtarsal sulcus ; it can be easily removed by everting the lid. Such cases are not infrequently treated for conjunctivitis without avail. In workshops particles of emery or iron rust often get impacted in the cornea ; in such cases, blockage of the lachrymal passage should be looked for, and if there is any sign of disease of the sac the foreign body should be left alone and the case referred without delay to the specialist. If the foreign body involves the pupillary area the case is again best left to the specialist, because it is easy to dig deeper than necessary into the cornea and leave a permanent scar which mars the vision ; the foreign body may have gone so deep that the scar is inevitable, but in either case the practitioner is likely to be blamed.

In other instances, after removing the foreign body with a spud under cocaine local anaesthesia, 5 per cent. protosil, or other similar non-irritating ointment, should be put into the eye, which should be kept well closed by means of a pad and bandage. This treatment should be repeated every day until the abrasion is healed. Open-air workers, such as farm hands and gardeners, get pieces of husk, insect-wing, etc., impacted in the cornea, which occasionally start serpent ulcer, often accompanied by hypopyon. After removing the foreign body, on the first appearance of ulceration, the case should be referred to a specialist with the utmost expedition. In such cases it is advantageous to use 1 per cent. optochin ointment after removing the foreign body, since the pneumococcus is generally responsible for serpent ulcer. All cases of corneal ulcer are best left to the specialist to deal with.

### Other Abnormal Conditions of the Eye

In a case of serious accident involving laceration, perforation, or rupture, the eye should be cleaned free of foreign matter by careful irrigation with a sterilized 1 per cent. sodium chloride solution and the use of moist pledgets of cotton-wool. A sterilized pad should be gently applied over the closed eye and the patient hurried off to the specialist ; if the specialist cannot be reached within about an hour after the accident, 5 c.cm. of milk should be injected into the buttock as a further first aid of the utmost importance.

Acute stye is a pyogenic inflammation of modified sebaceous glands associated with follicles of the lashes; it often produces alarming signs and symptoms out of all proportion to its seriousness. If at the onset tincture of iodine (*B.P.*) is applied to the swollen skin, followed by hot moist fomentations, and 5 per cent. protosil ointment is put into the eye twice a day the stye may resolve ; if it suppurates and points it should be pricked, the pus thoroughly pressed out, and the ointment

continued for a few days. Sometimes styes recur in crops ; these cases call for general toning up of the patient. Chalazion—a solid tumour of the Meibomian gland—is best handled by the specialist.

Burns of the eye due to lime, acids, and alkalis call for very urgent attention ; every minute's delay is valuable time lost. In the case of lime, the eye should be washed free of loose lime by irrigation with lukewarm 10 per cent. solution of neutral ammonium tartrate or 8 per cent. neutral sodium citrate, and the open eye bathed in an eye-bath holding either solution for about fifteen minutes, morning and evening, until the cornea clears. This sometimes takes months, but perseverance is often well rewarded by improvement in vision. Of alkalis and acids, caustic soda is the most dangerous ; hydrochloric, sulphuric, nitric, and acetic acids and ammonia come next in the order given. One per cent. solution of tannin, lukewarm, is excellent in both acid and alkali burns, and thorough irrigation should be carried out within five minutes of the accident if possible. Milk can be used in the same way, as also 3 per cent. sodium bicarbonate solution in acid burns and 2 per cent. boric lotion in alkali burns. Subsequent treatment is best carried out under the guidance of the specialist.

As soon as a child is noticed to squint he should be referred to the specialist for treatment ; otherwise the squint may become permanent and the squinting eye amblyopic.

Any sudden drop in the vision means some serious trouble in the eye, and calls for expert handling.

Most serious diseases of the eye are due to some slow, chronic—often obscure—intoxication, and a thorough detailed examination of every part and organ of the body to discover any cause at all is called for. The general practitioner inclines to fight shy of looking for venereal diseases in his patient ; in the long run this is unfair to the patient and the community. The sensible patient does not resent the necessary investigation, and in the case of the touchy, conventional patient, there need be no unpleasant questions ; it is easy to take the patient's blood and have the Wassermann test done. As the welfare of the patient is our first concern, the general practitioner should be as thorough as possible in his part of the investigation to enable the specialist to do his best for the case.

The symptoms of eye strain are legion, headaches being the most frequent. Even when there is some general disorder which may account for them, errors of refraction and heterophoria should be rectified if the patient is to get full relief.

A patient incapacitated by bilateral cataract is a misery to himself and to those that have to look after him, and barring mental instability, there are very few contra-indications for operation. The operation itself is practically painless, and the chances of success are as high as ninety-nine to one. Even if the operation fails the patient is practically no worse off than before ; on the other hand, success means new zest and happiness in life to him and everybody concerned. The general practitioner, in collaboration with the specialist, should not, therefore, if at all possible, withhold from the patient his chance. *Mutatis mutandis*, the same view holds good of glaucoma.

With increasing knowledge of things medical through the daily press and medical books and periodicals in the public libraries, the average member of the community has become more exacting in his demands on the medical profession. His tendency to resort directly to the specialist has been causing concern to the general practitioner. By circumscribing his scope in special branches within feasible limits, and acquiring practical efficiency within that scope, the general practitioner can, to a great extent, retard this inevitable tendency. Whatever is outside this narrowed scope should be referred without hesitation to the specialist. The average patient is sensible enough not to expect his doctor to be all-knowing ; he appreciates his doctor's candour in acknowledging this, and feels that in him he has a friend who will never abuse his confidence, never hit in the dark and miss the mark and then get the specialist to put things right. In other words, the patient feels sure that he is in safe hands, whose guidance he would not like to forgo.

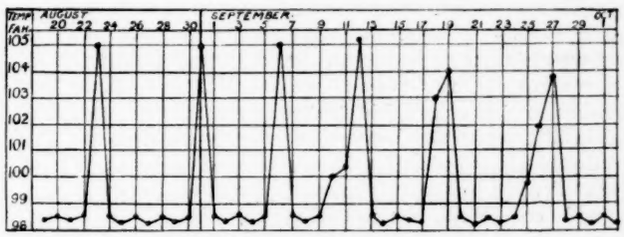
# Memoranda

## MEDICAL, SURGICAL, OBSTETRICAL

### A CASE OF RAT-BITE FEVER

The patient was a boy, aged 13 years, who was bitten by a rat in a cornfield on July 30th, 1932. The bites were upon both hands, and healed perfectly in a few days. He had no symptoms until August 20th, three weeks after the bite, when he had soreness of the throat and slight malaise. On August 23rd, twenty-four days after the bite, he was noticed to be feverish, and the temperature was found to be 105° F. On the following day it was normal, and he felt quite well again. On August 31st he appeared feverish, and the temperature was again found to be 105°. This temperature was checked by Dr. Kenneth Lachlan of Brentwood, with whom I later saw the case, and to whom I am indebted for his observations prior to our consultation. The patient was admitted to Charing Cross Hospital on September 14th.

The temperature chart shows the character of the fever. On the occasion of the fifth rise of temperature hourly




records showed that the fever was 103° or more for exactly twenty-four hours. On every occasion the rise of temperature occurred at about 9 p.m. The regular spacing of the rises of temperature is very striking.

Apart from the fever, there were present enlarged lymphatic glands in both axillae and a dusky red mottled rash over the trunk and limbs. The scars of the rat bites remained healthy throughout. The glands in the axillae were enlarged throughout the illness, but were tender only at the time of the fever. The rash appeared with each rise in temperature, and disappeared in about three days. There was no sore throat after the fever commenced, the spleen never became palpable, and no glands were enlarged elsewhere than in the axillae. The patient felt quite well between the rises of temperature. Frequent blood counts at various stages during the last two rises of temperature revealed only a slight polymorph leucocytosis. Blood cultures were sterile. Fluid removed by puncture of an enlarged axillary lymph gland contained mainly young lymphocytes and lymphoblasts, and no micro-organisms were recognized.

Dr. A. B. Rosher kindly investigated the case for me and succeeded in demonstrating the spirillum. During the fifth rise of temperature blood was drawn from a vein into sterile broth, and some of this was injected intra-peritoneally into five mice, from a batch previously tested to prove the absence of spirilli in the peritoneal fluid. One week after the injection the peritoneal fluid of the

mice was examined by dark-ground illumination, and no organisms were found. At the end of the second week the *Spirillum minus* was demonstrated in the peritoneal fluid of one mouse, and at later dates the organism was found in all the injected mice. Two guinea-pigs injected at the same time showed no organisms when examined in the same way, up to four weeks after the injection.

Following two small intravenous injections of arsenic the attacks of fever ceased, and the boy went home well.

The first description of rat-bite fever in England was written by Horder[1] in 1909. He deduced from the clinical manifestations of the case that the cause was probably a protozoon. It was not until 1916 that the causal organism was first found and described by Futaki and his associates,[2] working in Japan, where the disease is common. McDermott,[3] in his paper, gives a complete review of the literature of the disease.

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## A NOTE ON PREMATURE MASTOID DRAINAGE

On the strength of an experience of 500 operations for mastoid disease I venture to put forward a point of view regarding the optimum time for operation. Briefly, it is a protest against too early and frequent operation.

One is constantly hearing of cases of acute otitis of three, two, or even one day's duration submitted to a mastoid drainage which, I suggest, is practically never called for before the sixth or seventh day from the onset of the otitis. This situation arises almost entirely from excessive emphasis on the post-auricular tenderness of the acute otitis, which in no way indicates a mastoid abscess. This tenderness is due to congestion of the tissues over the mastoid from engorgement of the mastoid emissary vein, and is an utterly different manifestation from the tenderness which may subsequently develop from proximity of pus underneath the mastoid cortex. If this distinction between a primary otitic tenderness and the secondary mastoiditic tenderness were more clearly appreciated I do not doubt that more than 50 per cent. of cases at present operated upon would be permitted conservative treatment. It will be found, on ignoring this initial tenderness altogether—I will not myself even palpate the mastoid if called in to an early case—that in the vast majority of cases the temperature falls as the discharge thickens. Provided there is no pain after the first three days, and the temperature does not stay up more than four or five days, one may say with assurance that such a case will quieten down. The temperature chart is a good friend in the acute ear if one resolutely keeps to a twice-daily chart and despises the four-hourly.

In cases where tension must be relieved by paracentesis one may be prepared for a still higher temperature for forty-eight hours, and the earlier the paracentesis the more definite is this reaction liable to be; so much is this so that many—especially Mr. J. F. O'Malley—deplore too early incision of a drum in otitis. This contention may very well be sound. My own tendency is slightly away from the immediate operation I have previously advocated; there is, however, no justification for allowing fluid retention in the ear for more than two or three days, especially if much pain is present. Whether or not a reaction occurs in the temperature, I will wait practically a week from the onset of the otitis before considering the question of bone drainage. The factors which then influence me are: (1) renewed, even though slight, pain; (2) temperature remaining up on the seventh day; (3) an unusually profuse discharge; (4) renewed localized tenderness over the mastoid; (5) general aspect.

What justification can there be for opening up a mastoid process within a few hours or days when actual pus formation, much less erosion of important structures, cannot possibly have occurred? Admittedly there are cases of fulminating streptococcal infection which are attended by rapid bone destruction, but these patients are desperately ill and unmistakable in aspect. They are not the type of cheerful little schoolboy, sitting up in bed playing with his mechanical toy, who, because he has a perfectly ordinary otitic tenderness and a fairly high temperature, is only too often subjected to an entirely unnecessary mastoid drainage, within three or four days of the onset of the ear trouble, and, often enough, at the precise moment when the temperature is about to begin its downward course. What is found at operation? Inflamed bone, a little serous ooze therefrom, and an antrum containing muco-pus. Apart from the fact that an unnecessary operation has been performed, there is the consideration that tissues opened up in the very early stages of inflammation, before local and general resistance are well established, give much more reaction and take a less favourable immediate course than those operated on at a later stage. It is indeed true that the cases operated on at a stage which one would not oneself dare to wait for, do much better than others, provided, of course, that no intracranial or other serious complication has intervened. Such late cases usually arrive about the sixth to the tenth week; some of them with a lateral sinus erosion, others with a cortical fistula. It is far safer, however, in my opinion, to take a broad view of a case between the seventh and fourteenth days. Is the temperature satisfactory? Is there pain? Does the discharge still remain profuse? Does tenderness persist? If these questions cannot be satisfactorily answered it is, I suggest, infinitely better to operate in order to avoid both an insidious abscess and the risk of chronicity of discharge. In such cases, operated on not too early, the patient is usually up in a week and following his usual occupation in three or four weeks, with unimpaired hearing power.

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[1] Horder: *Quart. Journ. Med.*, 1909, iii, 121.
[2] Futaki and others: *Journ. Exp. Med.*, 1916, xxiii, 249; and 1917, xxv, 33.
[3] McDermott: *Quart. Journ. Med.*, 1928, xxi, 433.

# Reports of Societies

## THE CORPUS LUTEUM

At the last meeting of the Section of Obstetrics of the Royal Academy of Medicine in Ireland Dr. N. McI. FALKINER read a paper entitled "A study of the structure and vascular conditions of the human corpus luteum in the menstrual cycle and in pregnancy."

Seven corpora lutea were described by Dr. Falkiner in detail—three of them were obtained at hysterectomy during the menstrual period. The material was carefully collected and presented a well-stained and well-preserved series for histological study. The specimens were demonstrated by means of the epidiascope, and drawings were also shown to illustrate particulars of the vascular structure and the presence and significance of haemorrhage in some instances. The conclusions reached included the following: (1) That haemorrhage occurs in the ovary at two different stages of the menstrual cycle: (*a*) in the follicle at the time of rupture—the amount of bleeding is variable, its actual occurrence being doubted by many; and (*b*) in the corpus luteum in or about the time of the onset of the menstrual flow—this haemorrhage is generalized throughout the terminal capillaries of the luteal tissue where they are bordering the central cavity of the corpus luteum. (2) That when haemorrhage occurs in the corpus luteum it marks the end of its career as a gland of internal secretion. (3) That when pregnancy supervenes no

haemorrhage intervenes and the corpus luteum persists as an active structure. (4) That the recognition of contemporaneous haemorrhage in the corpus luteum and in the endometrium at the onset of menstruation supports Hartman's work on the anterior pituitary body.

Dr. R. M. CORBET said that this communication was most important as it confirmed the work of Hartman and carried the theory a step further. It seemed to show that the bleeding of menstruation was secondary to, and perhaps only incidental to, the haemorrhage into the corpus luteum. The primary factor was the destruction of the corpus luteum as a gland of internal secretion by some outside agent. What caused the corpus luteum to persist? On the evidence of ovarian pregnancies, particularly that of Gilmore and Statham, the stimulus must come from the ovum, probably the trophoblast. He asked if Dr. Falkiner considered that the ovum, before being embedded, could have any influence on the corpus luteum?

Professor A. H. DAVIDSON drew attention to the fact that Dr. Falkiner stressed the simultaneous occurrence of haemorrhage in the corpus luteum and in the endometrium. This seemed to support recent evidence that the former ideas regarding uterine haemorrhage were wrong. He thought that it was necessary to realize that the origin of menopausal bleedings was in the ovary, and that changes in the corpus luteum were very often the cause of abortions and of threatened abortions. He felt that most of the corpus luteum preparations which were in use at present were futile. These extracts were not from pregnant animals, and therefore he felt that they could have very little effect on the human female. Referring to the preparation called "antuitrin S," he asked why it should have any effect in stopping abortion or miscarriage when the corpus luteum was already dead. He personally had found this preparation of value in producing menstruation in amenorrhoeic girls, but had not found it of any value in cases of abortion.

Dr. D. J. CANNON said he did not think that haemorrhage of the corpus luteum was simultaneous with the haemorrhage of menstruation. It was very difficult in some cases to account for pathological haemorrhage, and it was also difficult to know what was the aetiology of cases of follicular haematoma. Some observers stated that these haemorrhages were purely passive, but it had been proved that the excessive use of "folliculin" produced haematoma. He considered that the haemorrhage which occurred in the corpus luteum was very different from that which occurred during menstruation. He felt that one of the most important things to be remembered was that the corpus luteum was necessary for the continuance of pregnancy. In all animals the partial removal of the pituitary gland had always produced abortion, and this showed that this gland also was necessary for pregnancy. He thought that the former conception of fibrosis uteri could not now be entertained, as clinical and experimental evidence seemed to have disproved it entirely.

Professor J. BRONTË GATENBY showed a series of lantern slides and referred to the efficacy of corpus luteum extracts. He drew attention to the fact that Dr. Falkiner had described for the first time the extent of the blood vessels of the corpus luteum.

Dr. BETHEL SOLOMONS referred to the excellent example of Professor Gatenby, who encouraged the close relation of the obstetrician with the biologist. Work on the corpus luteum was very incomplete; much remained to be learnt. No unanimous decision had been arrived at about its formation: the time of regression in pregnancy was stated to be at such varying periods by different authorities that he believed it must occur at different times in different individuals. Its effect clinically was different too: some had given it for haemorrhage, others for amenorrhoea; there were, of course, different hormones in the corpus luteum. He disagreed with those speakers who said corpus luteum was useless in hypofunction and in other conditions, such as frequent abortion and stillbirth. He did not know how it acted; if not directly, it probably stimulated the anterior pituitary body. There had not been sufficient evidence yet of the value of "antuitrin S," but enough work had been done to show that it was of some value. He believed that the cycle of the corpus luteum was as published in his *Handbook of Gynaecology*, but in a new edition the role of the anterior pituitary would be stressed. The view that the ovary was the causation of uterine haemorrhage was as old as the hills; the amount of work done at present might soon make it possible to prescribe definite hormonic preparations for definite types of haemorrhage.

## OTITIS MEDIA

At the December meeting of the Section of Otology of the Royal Society of Medicine, with the president, Mr. J. F. O'MALLEY, in the chair, Mr. T. B. LAYTON read a paper on the early signs of otitis media. The earliest sign was an erythema of Shrapnell's membrane reaching down to the anterior and posterior folds. There were also slight inflammatory changes in the drumhead and adjacent meatal wall. These showed as a haemorrhagic macule, or the macules might be three or four in number. This always indicated otitis media, and might be the early stage of an influenzal bleb. The other sign to which Mr. Layton drew attention was a flash of vessels running upwards and backwards across Shrapnell's membrane on to the superior wall, and also down the handle of the malleus. These early signs might be useful in prognosis and the management of cases, and also might help to detect cases that were liable later on to become the subjects of chronic deafness.

Dr. NANCY HOWELL followed with a paper on the value of paracentesis for otitis media in the acute specific fevers. It might be expected that the relief of tension and the drainage provided by this operation would avert mastoiditis. It secured relief from pain, but this was not necessarily an early symptom, and she had not found that it prevented the spread of infection to the mastoid. Nor had she found that otorrhoea ceased more quickly than after spontaneous perforation. In cases of whooping-cough developing otitis media, no mastoid operations had been necessary. Secondary paracentesis after spontaneous rupture of the membrane had sometimes been helpful, and had been of value in the diagnosis of a consecutive mastoiditis.

Sir JAMES DUNDAS-GRANT showed two patients in whom a large perforation of the tympanic membrane had been closed by painting the edges with trichloracetic acid. After about six or eight applications the perforation suddenly made progress towards closure. He had found that the hearing was improved and the tympanum protected from external infection.

Mr. F. C. ORMEROD showed a case of bilateral tuberculous otitis media in a man aged 27. Both lungs had been severely infected, and the purulent discharge from each ear had contained tubercle bacilli. The tympanic membranes became so swollen that they had been mistaken for polypi by an assistant. In spite of the severity of the case the ears had healed and the pulmonary condition became stationary under sanatorium treatment and local applications of spirit to the ears.

### Bilateral Auditory Nerve Tumour

Mr. F. C. ORMEROD showed a specimen of bilateral auditory nerve tumour occurring in a case of multiple neuro-fibromatosis. The patient, who was only 14 years of age, had shown the usual symptoms of deafness, tinnitus, occipital headache, and corneal anaesthesia on the right side. There had also been vomiting and bilateral papilloedema, but no nystagmus until late. The hearing in the left ear was normal, and labyrinthine tests showed the right ear inactive, while in the left ear the responses were delayed. The tumour had not been identified at operation, and the patient died soon afterwards. The specimen showed a large tumour in the right cerebello-pontine angle and a small one on the left auditory nerve.

Dr. ALBERT GRAY commented on the fact that the Rinné test had proved to be negative in this patient. This was possibly due to otosclerotic changes in the region of the stapedio-vestibular articulation. He had found such

changes in the temporal bones of a case of bilateral auditory nerve tumour studied with Dr. de Kleyn, and reported to the Section last May. In that case there had been absolute deafness. In the present case there had not been complete deafness, even on the side of the large tumour, showing there had not been complete degeneration of the cochlear nerve fibres. It seemed that tinnitus could be caused by a lesion of the nerve between the internal auditory meatus and the medulla. Mr. SYDNEY SCOTT suggested that the test was pseudo-negative, owing to the difficulty of excluding the opposite ear.

## THE MODERN CONCEPTION OF TUBERCULOSIS

At the December meeting of the Section of Medicine of the Royal Academy of Medicine in Ireland, with the president, Dr. W. G. HARVEY, in the chair, Dr. W. R. F. COLLIS read a paper on primary, secondary, and tertiary tuberculosis, their aetiology and prognosis. Lantern slides were shown.

Dr. Collis said that, according to the modern German concept of tuberculous infection, there were (1) a *primary allergic state*, in which some weeks after infection the tuberculin reaction first became positive and paratuberculous symptoms appeared—for example, enlargement of hilar glands, phlyctenular conjunctivitis, erythema nodosum ; (2) a *secondary allergic state*, which might follow close upon the first if the infection was not overcome, and which might be shown by such illnesses as caseating bronchopneumonia and meningitis ; and (3) a *tertiary allergic state*, which included the most common adult types of tuberculosis—it was marked by proliferation of fibrous tissue. Dr. Collis summarized his work on the differentiation of erythema nodosum into tuberculous and streptococcal types by skin tests and other methods of examination. He referred in particular to the method of obtaining tubercle bacilli by stomach lavage in children in the primary allergic state. This method enabled " proof positive " to be given of the existence of tuberculosis, as it furnished more certain information than tuberculin tests and radiological examination. He emphasized the fact that by utilizing this method it could be shown that in many cases of tuberculosis in the primary allergic state there existed open pulmonary lesions. From the clinical viewpoint it was important to search for and recognize children in this state for two reasons. The first was that the appearance of the primary allergic state pointed very clearly to some source of infection with which the child must have recently been in contact. He emphasized most strongly the need for discovering the contact case, often a member of the child's family, or (as in the case of the famous school outbreak in Sweden) a classmate. The second was that early diagnosis should mean recovery, for it appeared that the children responded admirably to constitutional treatment. They exhibited *par excellence* the stage of tuberculosis which was easily cured by such simple measures as rest and heliotherapy. They certainly should not be sent to sanatoriums where there were adults or older children suffering from open tuberculous lesions, and therefore highly infective. It was to be deplored that Dublin public health officials had not provided for the treatment of these patients. Lastly, Dr. Collis asked for the co-operation of Dublin doctors in helping him to continue his study, as he was eager for abundant material. Dr. Stanley Griffith of Cambridge had helped him very much in his work by typing the bacilli obtained from his patients. Both Dr. Griffith and he were anxious to obtain more information on the prevalent types of bacilli in various districts of England and Ireland.

Dr. T. W. T. DILLON said that when children of the type described by Dr. Collis were seen it was very difficult to diagnose tuberculosis. He personally had felt the lack of some such method as Dr. Collis's of proving to the children's parents and to the doctors who sent the children to him that they really had tuberculosis. He felt strongly that the public health authorities did not take enough notice of tuberculosis. After a case had been seen and diagnosed it was extremely difficult to get proper treatment for the child. There was a great need for a home where such children could be sent, similar to the hospital at Cappagh for cases of surgical tuberculosis. In early cases in which there was erythema nodosum it was really necessary to have positive proof that tuberculosis was present. He thought that Dr. Collis's paper represented a great advance in this connexion. The primary state of tuberculosis had two characteristics—the morphological aspect in the lungs and the allergic problem. In cases of bipolar lesions in which the patient was non-allergic it was not at all easy to convince the parents that the child was tuberculous. It was very difficult to differentiate between the primary and the secondary allergic state, and if an attempt was made to do so one was very likely to fall into pitfalls which led to confusion. He felt that the value of a test such as that described by Dr. Collis was inestimable from a social point of view. He thought that the most important thing to try to find out was how infection spread. The local focus of infection was very important, and he felt that in this country enough attention was not paid to this. It was essential to find out the foci of spreading infection, and until this was done not much progress in the treatment of tuberculosis would be made. It was necessary for the children to be constantly in the open air, and to have plenty of rest and good food.

Dr. ABRAHAMSON said that he found it hard to accept the notion of an erythema nodosum of tuberculous origin, quoting cases from his experience to support his view.

## PYELOGRAPHY

At the meeting of the Aberdeen Medico-Chirurgical Society on December 1st, with the president, Dr. W. CLARK SOUTER, in the chair, a paper was read by Mr. F. K. SMITH on pyelography in diagnosis. After a short discussion of the history of the development of pyelography, with the introduction of the use of abrodil, uroselectan A, and uroselectan B, and the work done in Lichtenberg's clinic, Mr. Smith emphasized the advantage of uroselectan B in that 15 grams could be dissolved in 20 c.cm. of water, as compared with the large amounts of water required to make solutions of the earlier substances. A denser shadow was shown by sodium iodide used in retrograde pyelography, but intravenous pyelography was the more reliable method. Mr. Smith illustrated this by the history of a case in which retrograde pyelography had revealed a pelvis where apparently the lower portion was obliterated and a diagnosis of tumour was made ; to verify this finding, however, uroselectan B was administered intravenously, and the radiogram showed the presence of a double pelvis and two ureters, the opening of the second ureter into the bladder having escaped notice. Mr. Smith then showed a large number of slides of radiograms illustrating the help afforded by pyelography in the diagnosis of difficult kidney cases.

A circular (No. 1269) relating to the contents and arrangement of the annual reports for 1932 of medical officers of health to local authorities has been issued by the Ministry of Health. As in the case of the years since 1925, it has been decided that the annual reports for 1932 should follow the lines of what is termed an " ordinary " report, a full " survey " report not being required this year. The matters to be dealt with comprise an account of the statistics and social conditions of the areas ; of the general provision of health services where medical officers of health of county and county boroughs are concerned ; of the sanitary circumstances of the area (by all medical officers of health except those of metropolitan boroughs) ; of housing ; and of the prevalence of, and control over, infectious and other diseases. In view of the fact that a certain amount of difficulty has been experienced by some medical officers of health in former years in determining which sections relate to the various classes of local authorities, a rearrangement of the instructions previously given has been supplied in an appendix, which, it is hoped, will now make this matter quite clear.

# Reviews

## CHOYCE'S "SYSTEM OF SURGERY": VOLUME I

During the nine years which have elapsed since the publication of the second edition of Choyce's *System of Surgery*[1] considerable advances have been made in this subject. The third edition, now published, shows evidence of a careful revision and scrutiny of every section, which renders it representative of the present position of British surgery. In the first volume several changes of authorship are noticeable. The article on surgical bacteriology has to a large extent been re-cast by Professor Beattie, and Mr. J. B. Hunter has succeeded the late Maynard Smith in writing on the clinical causes and treatment of inflammation. The chapter on burns and scalds has been rewritten by Mr. A. J. Gardham and enlarged by articles on *x*-ray and radium burns. That on tumours remains much the same as in previous editions. Minor changes and additions have been made in many of the descriptions, as in those of Recklinghausen's disease and glioma. Accounts of tumours of the notochord, under the heading of mucinous sarcoma, of the endothelioma of the nasopharynx (described by Trotter), and of the epithelial tumour arising at the base of the brain in connexion with Rathke's pouch have also been included. The general account of carcinoma has needed revision in certain particulars. At the time of the last edition the recent discovery of the Rous tumour and the researches on the experimental production of cancer raised the hope that the discovery of the essential cause of cancer was within sight. This hope has not been realized, nor have the expectations based on Warburg's claim to have demonstrated a specific metabolism in cancer tissue materialized. With regard to the results of radium treatment, while the destructive effect of the rays on the tumour cells is fully appreciated, interest has shifted somewhat to the effects produced on the normal tissues, and the limitations of the treatment are more clearly defined. There is a new chapter, by Mr. G. E. Birkett, on the surgical uses of radium, and a section on cholecystography is found in Mr. Magnus Redding's chapter on *x*-ray diagnosis. The section on local anaesthesia has been greatly amplified by Mr. Webber, who has also revised that on spinal anaesthesia. The subject of gonorrhoea has been undertaken by Mr. A. H. Harkness, the original article being condensed and practically re-cast. These alterations, together with the transfer of the articles on diseases of the skin and breast from a subsequent volume, have made but little material difference in its size.

## PRÉCIS DE CANCÉROLOGIE

The Compendium of Cancerology,[2] by Professor J. DUCUING, embodies the teaching and practice of the anti-cancer centre at Toulouse, which he directs. After a short introduction the author runs rapidly through the important features of malignant new growths in general. These chapters are liberally illustrated by skilfully executed schematizations of the microscopical appearances of the various forms of cancer—epithelial, connective tissue, and endothelial. As the author candidly explains in the preface, these are not faithful representations or photomicrographs of actual specimens, but carefully chosen simplifications of such, designed to emphasize those features which are significant, while suppressing irrelevant detail. They seem to be admirably suited to their purpose, and Ducuing is convinced of their success in teaching. A few are not very successful, and the diagram of chorion-epithelioma, for example, is frankly a diagram requiring careful reference to the explanatory legend. The English reader will readily recognize "Jean" Paget from the disease of the nipple which bears his name, and Percivall Pott published his account of chimney-sweep's cancer in the latter part of the eighteenth century, long before 1875, the date mentioned. The experimental study of cancer is passed over rapidly, the author's views being mainly taken from the work of Roussy.

The greater part of the book deals in detail with the clinical, pathological, and therapeutic aspects of cancer in the different organs of the body. Operative and radiological methods are equally crisply dealt with. The style is terse, vivid, and dogmatic, on the principle that it is better for a beginner to have clear views, even if these are later found to need revision, than to drown in a quagmire of contradictory uncertainties. The book can be warmly recommended to those who wish to obtain a stimulating and clear impression of the present position of the treatment of cancer by modern methods, as carried out at this well-known centre.

## FUNCTIONAL PATHOLOGY

A summary of the clinical experiences of the eminent professor in charge of the second medical clinic in Berlin must command attention. Professor BERGMANN has made a digest of the collected papers of his colleagues and himself, and the result is a book[3] which bears on every page the stamp of his own inspiring personality and thought. The theme which runs through the book is that which gives it its title—that disease is best regarded and treated as a disorder of a normal function. The cause of the disorder may be infection or trauma, but the infectious diseases as such are not dealt with: indeed, tubercle is not mentioned, except that its omission is remarked on. The reactions of the patient's tissues and organs, the disturbances of function—these are the subject of the book to which the author has given the title of "functional pathology." The notion of the pathology of the living has been before the profession for a generation, but as originally used it connoted the state of the internal organs laid bare, flaccid and anaesthetized, at operation. Professor Bergmann has endeavoured to describe the disturbances in the mechanism of the body when attacked by disease. In the study of functional disorder of the internal organs his greatest aid has been the *x* ray, and he pays tribute to the far-reaching advances made by radiologists generally and by his own assistant, Knothe. Beginning with a study of the colon, as shown by *x*-ray examination of patients after an opaque meal, the author traces the advances in our knowledge as radiological technique has improved, until colitis has emerged as a clinical entity, with its evolution from a catarrhal state to a widespread ulcerative condition. Just as the state of the lining of the colon can be demonstrated, as well as that of the muscle wall, so a new era of gastric pathology has been opened by the demonstration of gastritis surrounding and preceding ulceration of the stomach. This condition of inflammation of the gastric mucous membrane has been confirmed by direct observation with the gastroscope, and has led to considerable advances in the treatment of patients. The author passes on from the other digestive organs, the liver, and pancreas,

[1] *A System of British Surgery*. Edited by C. C. Choyce, C.M.G., C.B.E., B.Sc., M.D., F.R.C.S. Pathological Editor: J. Martin Beattie, M.A., M.D., C.M. In three volumes. Vol. i, third edition. London: Cassell and Co., Ltd. 1932. (Pp. 1,112; 286 figures, 100 plates. £6 net the three volumes.)

[2] *Précis de Cancérologie*. Par J. Ducuing. Paris: Masson et Cie. 1932. (Pp. 1,257; 516 figures. 140 fr.)

[3] *Funktionelle Pathologie: Eine klinische Sammlung von Ergebnissen und Anschauungen einer Arbeitsrichtung*. Von Dr. Gustav von Bergmann. Berlin: J. Springer. 1932. (Pp. 425; 74 figures. RM.18.60; Geb., RM.19.80.)

to the phenomena of disease of the heart and blood vessels, affections of the endocrine glands, and disorders of the cell metabolism in such conditions as obesity and diabetes. He leads on in natural sequence to the states of vagotonia and sympatheticotonia (recognizing that the disturbance is usually a mixed one), and so to a consideration of the patient's reactions as a whole.

Professor Bergmann, in showing the interrelation of the symptoms and their reaction on the body as a whole, not only makes a synthesis of his conceptions of the disabilities entailed by pathological functioning of the various organs, but urges that the patient should be considered as an entity. His conception is not so much that patients have various diatheses, as that one part of the machine tends to show signs of wear and stress before other parts. He emphasizes that early signs of disorder should not be treated as "digestive neuroses" or "cardiac neuroses," but should be diagnosed as early cardiovascular degeneration, early hyperpiesia, forms of mild thyrotoxicosis, incipient ulceration of the stomach or duodenum, or colitis. For this reason he insists on a careful history of the complaint, with due attention to the patient's symptoms, as well as the objective results obtained with the various tests used. In the final chapters the author deals with psycho-physical phenomena, with the co-ordination and regulation of the functions of the body, the regulation of temperature, of blood pressure, of blood sugar, and the acid-base equilibrium, through nervous reflexes and humoral control. The book is illustrated by numerous reproductions of *x*-ray pictures. It is a broad-minded and philosophical review of modern medicine and its future possibilities.

## FRAUD IN MEDICO-LEGAL PRACTICE

God hath made man upright; but they have sought out many inventions.—Eccles., vii, 29.

It is a saddening thought that every improvement in our social conditions should be associated with the development of anti-social tendencies which act as a clog and a parasitic growth. Such, however, appears to be inevitable, and a noteworthy example, to name one only, may be found in the increase in claims under the Workmen's Compensation Act. Those claims have grown enormously during recent years, and have become a problem of great importance.

The cost of insurance against industrial accident and disease is far in excess of the actuarial estimates on which the Compensation Acts were based, and every step taken to eliminate false or unjust claims should be welcomed. Sir John Collie, in his book on *Fraud in Medico-Legal Practice*,[4] treats the whole subject in a broad and comprehensive manner. Though considerably abridged from his former work on malingering, there is much information which should be of real help to the practitioner who has to deal with the examination of persons for insurance purposes or before taking up appointments as well as with cases of injury and industrial accidents. Careful attention to the precepts of the author will no doubt save the practitioner from falling into many of the pitfalls that beset this type of practice. It is obvious that no author can adequately treat such a wide subject in something under 270 pages, and it would perhaps be wiser in future editions to leave out such sections as that on feigned insanity or greatly to improve them. The section on the estimation of the degree of dysfunction after injury by various tests and the unmasking of the frank malingerer and exaggerator will be found of service, as will the discussion on accident complicated with disease. The sections, however, on miner's nystagmus, *x*-ray examination in general functional nerve disease, and self-inflicted injuries are incomplete, and do not show the author at his best. Taking the work as a whole, however, it may be recommended with confidence as a source of help to those engaged on the type of work we have discussed.

[4] *Fraud in Medico-Legal Practice*. By Sir John Collie, C.M.G., M.D., J.P., Lieut.-Colonel R.A.M.C. London: E. Arnold and Co. 1932. (Pp. 276; 47 figures. 10s. 6d. net.)

## GREVILLE MACDONALD'S REMINISCENCES

That Dr. Greville Macdonald, son of the famous author George Macdonald, has inherited literary and philosophical powers of a high order is convincingly proved by his latest work, *The Reminiscences of a Specialist*.[5] This is an arresting autobiography, giving a fascinating account not only of his own trials and successes, but of those of others, frankly set out with fearless independence. His professional career was full of incident. He was one of Lister's first dressers at King's College Hospital, surgeon for six months on a merchant vessel (made a veritable hell by the captain), for a year and a half medical officer in a private asylum with its abuses, and was in private practice (which was a failure from the financial point of view), first at Bordighera and then at Florence. When faced with deafness the author came near to giving up the professional struggle. But the tide turned with startling suddenness. After a stormy year as house-surgeon at the Throat Hospital, Golden Square, with the dramatic sequel of the resignation of the staff and Macdonald's promotion to it, came private practice in Queen Anne Street and, with little delay, a rush of patients.

These reminiscences of his career as a specialist are extremely interesting, especially because of the method of their presentation; but there is far more in the book than its perhaps restricted title would suggest. It contains the inner history of events in the lives of friends long dead, some of them much in the public eye, described with true understanding and sympathy. From his close connexion with the late Sir Morell Mackenzie, first at the Throat Hospital and then in private practice, the author is able to draw a picture of the German Emperor's case in a light rather different from that in which it is often regarded, and show its disastrous effect on Mackenzie. Another tragedy is the love story of John Ruskin and Rose La Touche, now half a century old, but probably unfamiliar to most readers—this is based on data provided by Macdonald's parents, who were close friends of Ruskin. Perhaps it is all to the good that the author did not keep a diary, for as a result he has fallen back on his letters to his mother, which are indeed most charming reading.

The book gives a revealing account of Macdonald's psychological evolution, and suggests that, as in the case of James Hinton, aural surgeon to Guy's Hospital and mystic, professional success was but a minor incident in life.

## SOCIAL WELFARE

There is certainly much that is useful in a little book entitled *Social Science for Health Visitors*,[6] by Evelyn Wilkins, but the answer to the question whether it is really adequate for the purpose it is intended to serve seems more doubtful. True, it is described merely as an "introduction" to its subject. It is said to cover "that section of the syllabus for the Royal Sanitary Institute certificate for health visitors which deals with sanitary law, government, and social problems (with the exception

[5] *The Reminiscences of a Specialist*. By Greville Macdonald, M.D. London: George Allen and Unwin, Ltd. 1932. (Pp. 422; 8 illustrations. 16s.)

[6] *An Introduction to Social Science for Health Visitors*. By Evelyn Wilkins, B.A.Lond. London: Edward Arnold and Co. 1932. (Pp. 128. 4s. net.)

of those parts explicitly relating to law)." The propriety of this claim and the effectiveness of the book for these particular requirements of students in training as health visitors can be decided only by those in intimate contact with such requirements and training; and the author, who is head of the department of hygiene and public health at the Battersea Polytechnic, may be presumed to know. Any suggestion of inadequacy, then, must be directed less at the book than at the requirements of the Royal Sanitary Institute. The fact remains, however, that in a volume which can be read from start to finish in about an hour and a half it is scarcely possible to deal properly, even in an introductory way, with the history, principles, administration, and effects of social welfare schemes and provisions concerning maternity and infant welfare, the school child, the delinquent, the adolescent, the worker, tuberculosis, venereal disease, mental deficiency and lunacy, poverty, insurance against sickness, unemployment, widowhood, and old age, and housing problems. The degree of compression necessary is bound to lead in some instances to omissions which have the effect of inaccuracies, and occasionally to a relative lack of emphasis or development of matters of fundamental importance. Two errors of this kind should certainly be corrected because of their importance in relation to future reforms. It is not the case that "the Ministry of Health is now responsible for all health matters," for health services relating to factories, workshops, dangerous drugs, and other things are still administered by the Home Office; and it should be noted that the Board of Education, in supervising the school medical service, does so only by grace of, or at the request of, the Ministry of Health, in whose province this also is placed by statute. Nevertheless, the arrangement of the book is excellent, the method of approach to the subjects effective, and the statements clear, and there are pages here and there, setting out the principles on which certain provisions are based and the considerations which are necessary in applying them, which could scarcely be bettered.

### THE MEDICAL DIRECTORY, 1933

Some affairs are ordered better in England than anywhere abroad. The *Medical Directory*, like the City of London and the *Times*, is a peculiarly British institution which fills the discerning foreigner with envy. For eighty-nine years now the medical profession, and the public too, have been well served in this respect by Messrs. J. and A. Churchill, and the new edition of the *Medical Directory*,[7] published this month, is fully equal to any of its predecessors. The numerical summary, which will be found near the contents page, shows that the volume for 1933 includes 55,952 names, representing an increase of 472 on the total for 1932. The figures for London and the Provinces have increased substantially, and it is interesting to note that the metropolis now contains more doctors than there were in the whole of the Provinces eighty years ago. As compared with 1932, the figures for Scotland, Ireland, and the Services show considerable decreases; but Wales and Abroad are almost unchanged. Dr. Fortescue Fox's medical notes on British spas and seaside resorts have been revised and amplified, with a key to the chief British waters arranged in tabular form and many new illustrations in the text, so that this section of the book is now much larger and more attractive than ever before. It forms a valuable guide to the climatic resorts and their medical values and uses in the prevention and cure of disease. The "Late List" of new names, changes of address, etc., appears at page 2154.

[7] *The Medical Directory, 1933.* London: J. and A. Churchill. (36s.)

## Notes on Books

The third edition of Dr. R. A. FISHER'S *Statistical Methods for Research Workers*[8] was noticed in these columns two years ago. The principal changes in the fourth edition are in connexion with the study of the analysis of covariance and the choice of technical notations. The science of statistical analysis has developed so rapidly during the last ten years—Dr. Fisher having himself been one of the principal contributors to knowledge—that it is difficult, perhaps impossible, to explain the logical basis of various statistical operations to those without considerable knowledge of mathematics. The alternative is to provide a large number of worked-out arithmetical examples of the methods recommended. This is the course Dr. Fisher has adopted, and a person even scantily equipped with mathematics who has worked through these examples cannot fail to acquire a practical acquaintance with important methods of analysis not otherwise obtainable. Any intelligent person can judge for himself whether the problem he desires to study is cognate with those of the examples, and so select the appropriate method. It is easy, from a study of performance, to decide what type of motor car is suitable for one's requirements without having any profound knowledge of the complicated anatomy and physiology of modern internal combustion engines.

The study of medical and veterinary entomology must embrace a certain amount of classification and morphology, and if the subject is to be thoroughly understood a fairly high degree of skill in drawing is required of the student. To compensate for the lack of this in many cases, and to assist in the saving of time in all, Lieut.-Colonel M. ST. L. SIMON has prepared a set of sketches of the important arthropods usually studied in these courses.[9] The booklet consists of nine plates, the first being a table of classifications, the remainder classified illustrations of the various types. The drawings are not made to any particular scale and are (except for the generic name) unlabelled, so that the student can only use them as a basis for his work, not as a substitute. The types selected are those in use in the Edinburgh D.T.M. and D.T.V.M. courses, and the charts have been prepared with the active supervision of Dr. A. E. Cameron, the lecturer in entomology at that school. The charts, used intelligently, should be invaluable to all students of the subject, and their low price removes any reason for not profiting by Colonel Simon's capable draughtsmanship.

[8] *Statistical Methods for Research Workers.* By R. A. Fisher, Sc.D., F.R.S. Fourth edition, revised and enlarged. Edinburgh and London: Oliver and Boyd. 1932. (Pp. xiii + 307. 15s. net.)

[9] *Diagrams and Sketches of some Insect Vectors and other Arthropoda Injurious to Man or Beast.* Garret and Campbell, Ltd.: Chancery Lane, W.C.2. (3s.)

## Preparations and Appliances

### A LIGATURE GUIDE OR JIGGER

Mr. ALAN W. FAWCETT, F.R.C.S. (Sheffield), writes: Some eight years ago I designed the instrument illustrated herewith. It consists of a fluted hexagonal stainless steel rod ten inches long. The handle is slotted to take a piece of tape, so that the instrument can be attached to the gown of the assistant or operator. The other end terminates in a V-shaped fork, which is used to carry a ligature down into a deep or inaccessible cavity.

The method of use is as follows: A ligature is held by the operator in both hands, whilst his assistant places the V fork of the instrument about its mid-point, and so passes it down to the point of the artery forceps, which is then swung forward whilst the ligature is still held in place by the jigger. The ligature is then tied, the forceps being removed slowly first, followed by removal of the "jigger."

The instrument is extremely useful in gynaecological operations—panhysterectomy, vaginal hysterectomy—and also in cholecystectomy and many other operations. The Medical Supply Association, Limited, Sheffield, are the makers.

# INSTITUTE OF MEDICAL PSYCHOLOGY

## INAUGURATION OF NEW PREMISES

The Institute of Medical Psychology, formerly known as the Tavistock Square Clinic, invited its friends and neighbours in the university quarter of London to two "house warmings" at its new premises in Torrington Place on December 9th and 10th. A large building, previously a lorry garage and workshop, has been leased from University College, and re-adapted structurally, furnished, and equipped, at a cost of about £7,500. Externally the building still conveys some suggestion of its earlier use, but within it is extremely comfortable, and pleases the eye at every turn. The waiting room is so cheerful that one feels that therapeutic influences must begin there, before the patients go to one or other of the seventeen consulting rooms, all of which are furnished and draped in the same style—with green, we notice, as the predominant colour—and as far away as possible from the inhibiting bareness of the old type of out-patient department. A charming room is allocated for remedial play by children, where they are kept under observation without being aware of it. In addition, there is a library, a laboratory, a room for the diagnostic physician, various offices, refreshment rooms for patients and staff, and a large lecture hall, which is also to be used for handicrafts. The building is a narrow one of two floors, about 150 ft. in length.

Both the inaugural meetings held on successive days were presided over by Sir Henry Brackenbury, the chairman of the council of the Institute, and brief addresses expressive of appreciation of the Institute's work were delivered. Sir Walter Fletcher, secretary of the Medical Research Council, spoke of the value of the Institute from three points of view—remedial, educational, and research. The organized body of knowledge in psychological medicine which was gradually accumulating would be of the utmost value. As for the need for research, it was sufficient to say that in no field of medicine was ignorance more profound than in that which had to do with the brain and the mind. Dr. Bernard Hart, from University College Hospital, sketched the rise of psychotherapy. The psychological factor in medicine, he said, was appreciated at a very early time. Henry de Mandeville, for example, in the thirteenth century, counselled that the patient's spirits should be kept up with music of viols and the ten-stringed psaltery, or by forging letters describing the death of his enemies, or by telling him, if he happened to be a churchman, that he had been elected to a bishopric—betraying a sound psychological insight, whatever might be thought of the ethical standard. The birth of psychotherapy, however, which was not quite respectable, said Dr. Hart, could be traced to the "magnetizers" and "strokers" of the seventeenth century, and later to Mesmer and his followers, whose observations took cognizance of real facts, although the theory propounded to explain them was fantastic. A more scientific era began with the work of Charcot, and later of Janet and Freud and a host of others, so that gradually there had emerged a clearer understanding of the psychological factors and their part in the causation of disease.

On the second day Professor W. Langdon Brown of Cambridge made an interesting comparison between the twentieth century and the later nineteenth. The nineteenth he described as a century of hard-driving materialism, veneered over by romanticism. The only way in which that could be kept as a going concern was to put on blinkers, useful enough to the horse, but in human society preventing people from realizing what was overtaking them. The twentieth century, on the other hand, was characterized by a sense of awareness quite foreign to the nineteenth, and the first effect of increased awareness was an extraordinary increase in unhappiness. If he did not believe that that unhappiness would yield to better adjustment to environment he would throw up his hands in despair. Professor Langdon Brown said that he himself had been trained in a materialistic school of medicine, and his interest in the psychological side of medicine was of the nature of sheer revolt. He had come to realize that there were quite as many people (or more) who were ill because they were unhappy, as were unhappy because they were ill. These people, afraid above all things of being told that what they suffered from was "just nerves," began to "cook" physical symptoms which often had no real basis. He suggested what trouble might arise from the effects of association, from painful subconscious memory, and so forth; and although the possibility of organic disease must not be overlooked, the explanation of nervous strain declared itself again and again in some inferiority or psychological weakness. The final address was by Professor W. W. Jameson of the London School of Hygiene and Tropical Medicine, who said that the experience of his school had shown quite definitely the need for the clinical and educational work of the Institute. He referred particularly to industrial sickness statistics which had been collected at Gower Street. An analysis of sickness absenteeism among the employees of one very large firm showed that the most common cause of all absences, next to colds and influenza, and, in the case of males, accidents and injuries, was so-called "nerves"; and if prolonged absences from work only were taken, the trouble usually described as "nervous breakdown" held the first place. The matter was of great importance, therefore, not only to the medical profession, but to employers of labour, and to neglect mental symptoms and concentrate on physical weakness was unfair to the patient and wasteful to the community. The psychological approach to medical problems, said Professor Jameson, was indispensable. He hoped that those at present engaged in the modification of the curriculum would give some attention to the position of psychotherapy, even if it meant the abandonment of some other studies; and he hoped, further, that the claims of the Institute would be recognized by local authorities and others, and also that before long it would be accorded university recognition. Dr. H. Crichton-Miller, the honorary director, in thanking the speakers, made an envious reference to Professor Jameson's school, which, he said, enjoyed American grants, while the Institute had to subsist on British overdrafts. He paid a tribute to various workers and donors who had made this enlargement possible, and, above all, to his deputy director and chief of staff, Dr. J. R. Rees, whose unquenchable optimism in the face of many difficulties had at last justified itself. He also expressed a debt of gratitude to Sir Henry Brackenbury, saying that those who worked at the Institute had cause to be very highly appreciative of the fact that at the head of its executive there was one who brought to it the great prestige attaching to the chairmanship of Council of the British Medical Association.

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The Charles Mickle Fellowship for 1932 has been awarded to Gaston Leon Ramon, D.Sc., Toronto, Director of the Pasteur Institute farm at Garches, France. This award is made to Dr. Ramon for his work on diphtheria toxin, anatoxin of diphtheria, and practical methods for community protection against infectious disease. The fellowship is awarded to that member of the medical profession who is considered by the Council of the Faculty of Medicine of the University of Toronto to have done most during the preceding ten years to advance sound knowledge of a practical kind in medical art or science. It was bequeathed by the late Dr. W. J. Mickle, and is the annual income from an endowment of 25,000 dollars.

British Medical Journal

SATURDAY, DECEMBER 17th, 1932

# RADIUM THERAPY

Lord Lee has, we think, earned the gratitude not only of scientific radiologists but of the medical profession and of the public generally by his outspoken criticism and comments upon the uses of radium as a therapeutic agent. To most medical practitioners the subject is so beset with technicalities that they find it difficult to form very clear opinions upon it, and we have no doubt that the British Institute of Radiology acted wisely in inviting Lord Lee—the lay chairman of the National Radium Commission—to deliver the fifteenth Silvanus Thompson Memorial Lecture on December 8th. In his official capacity it has been his duty to hear all sides of this difficult question and to sum up the opinions of his technical colleagues. In the early part of his lecture he dealt with the relations of radium therapy and of surgery to the treatment of cancer, and broadly discussed the question whether *x* rays and radium are to be looked upon as merely the handmaidens of surgery or whether in the future the whole treatment of cancer is to be handed over to the radio-clinicians. It is, we think, clear—and upon this Lord Lee strongly insists—that the ideal method is by whole-hearted co-operation between radiologist and surgeon.

In regard to radium treatment as distinguished from *x* rays there are two separate problems to be faced. The one is the surgery of access to the diseased parts; the other is the question of radium dosage and the best method of distribution of the individual radium or radon units. The first is clearly a problem for the surgeon; the second is in essence a problem for the scientific radiologist. To ensure the best result for the patient the obvious ideal is the whole-hearted co-operation of both. It cannot be too clearly recognized that the biological action of radiations is in itself a life study. It has many aspects which are perhaps not immediately obvious, but among them may be mentioned the physico-chemical actions of the radiations, the changes produced by them in living cells—malignant and non-malignant—and the intricate problems underlying the effects of radiations of different wave-lengths. It should be evident even to the uninitiated that such questions as the chemical action of radiations must be of fundamental importance in the consideration of these problems. We cannot claim to understand the action of *x* rays and of the radiations from radium upon cancer cells until we have some knowledge of their actions not only upon normal cells, but upon cell constituents and cell metabolism. In other countries it is sometimes the custom to dignify these investigations by such names as radio-chemistry, radio-biology, radio-physiology, or radio-pathology. Such a terminology does not usually appeal to us here, but it has at least the merit of bringing into prominence the multiplicity and complexity of the problems which have to be faced when we apply *x* rays or radium to the treatment of disease. It is in the investigation of these fundamental problems that the scientific radiologist has to play his part. As separate scientific entities they again will claim their own special votaries, but, however the radiologist may elect to specialize, it is his province to co-ordinate the work of other specialists and to be ready to put the sum of his knowledge at the disposal of suffering humanity. Here is surely work enough for any average lifetime. Equally, the attainment of that anatomical knowledge, confidence, and exquisite manipulative skill which we admire in our surgeons is again enough to occupy one man's attention. Attendance at a comparatively short course of instruction either here or abroad is quite inadequate to supply the combined experience of radiologist and surgeon. There is another point. In view of the ever-increasing accumulation of knowledge it is in practice impossible for any one man to hark back to the encyclopaedic erudition of some of our predecessors, and accordingly all knowledge tends to become specialized. Moreover, most people will probably agree that those qualities which go to make an efficient research worker in one or more of the various branches of the study of the action of radiations are by no means those which have produced our best surgeons.

This was Lord Lee's first point—the necessity for thoroughgoing co-operation upon equal terms between the radiological and surgical experts. In the great radium clinics on the Continent this principle is fully recognized, as it is beginning to be in some places in our own country; and it is in precisely those centres where this co-ordination of research and practical use is insisted upon where the best results have been obtained. With the ever-increasing demands for economy there is a tendency to consider the scientific worker a superfluity, and to hope that he may be replaced by a junior officer who has taken out a short course in radium therapy. A moment's consideration of past history should be enough to dispel this wholly fallacious estimate of pure scientific work. When Faraday in 1831 completed his marvellously fruitful piece of research which was crowned by the discovery of electromagnetic induction he was asked, "What is the use of it?" His answer was caustic and cryptic. Yet even the stupendous intellect and almost uncanny prescience of Faraday would hardly have enabled him to reply that the simple deflection of a galvanometer needle was but the outward and visible sign of a power that was not only to revolutionize our industrial and domestic life, but to throw light upon the constitution of matter itself and to be of use in the diagnosis and treatment of disease. Nevertheless all this has happened in

the course of a century. At all costs it is necessary to maintain the research side of radiology at the maximum of efficiency. Instead of the "radium officer" being a junior acting under the direction of the honorary staff, he must be a colleague well versed in physics and pathology, and with extensive laboratory and clinical experience.

Perhaps the most valuable results as yet achieved by the application of radium to the treatment of cancer have been in cutaneous affections such as rodent ulcer, and in cancer of the tongue and cervix uteri. In these conditions it is now generally regarded as the treatment of choice, and has largely superseded the devastating and mutilating operations which in the end were but too often unsuccessful. In cancer of the breast the problem is not so clear, but the combination of surgical operation with radiation therapy appears generally to have given the most satisfactory results. Lord Lee referred briefly to the decision of the Radium Commission that the contents of the four-gram radium "bomb" should be distributed in smaller units, and to the deplorable statements made in connexion therewith in certain sections of the lay press. He quoted the conclusion of the Scientific Committee convened by the Presidents of the Royal Colleges of Physicians and Surgeons that "in view of the circumstances the action of the Commission in abandoning the four-gram unit was certainly justified." Should it at any subsequent time be thought desirable to reassemble the divided radium into a four-gram unit the procedure is perfectly simple, since the radium salt is packed in a series of tubes which can be distributed, assembled, or added to as experience and circumstances may indicate. At present the four grams of radium element have been divided into four separate units of one gram each, which have been entrusted to different institutions. It is hoped thereby to gain increased knowledge of the action of massive radiation with the maximum of benefit to the patients and the minimum of danger both to the patients and to those who have to carry out the treatment.

Reference was also made to the dangers consequent upon the industrial uses of radium and other radio-active substances, and to the traffic in quack remedies which contain or are supposed to contain them. This was the subject of an annotation in our last issue, and we need not refer to it again at any length here. In the cases of industrial poisoning in America, which were first described by Dr. Martland, many of the victims developed sarcomata of a highly malignant and metastasizing type, and the same is certainly a possible sequel to the ingestion of quack remedies which actually contain radium or thorium salts. While on this subject we may mention a recent suggestion that colloidal preparations of thorium should be injected intravenously to facilitate radiographic diagnosis of the liver and spleen. Such a procedure seems to us absolutely unjustifiable, whatever may be its diagnostic value, especially as its advocates naïvely remark that it "remains to be seen" what the ultimate effects will be. One point raised in the lecture may, we think, give rise to some misapprehension. Lord Lee has hopes that the enormous cost of radium will act as a deterrent to the enterprising quack. This, however, does not apply to thorium, and it was to thorium derivatives that some of the cases of industrial poisoning were due. We quite agree that radio-active materials should promptly be scheduled as dangerous poisons, as was advocated in a paper by Dr. Colwell and Professor Russ that appeared last July.[1] It is perhaps hardly necessary to say that this poisonous property of radium is only manifested when it is absorbed in the body, and that no anxiety on that score can arise when it is inserted in metal containers for therapeutic purposes.

In conclusion, the lecturer made a plea for the national control of radium. The policy of the Radium Commission is, and always has been, to try to secure the best results by concentrating radium treatment at special centres. At these centres it may be used under the best conditions, expert radiological co-operation can be obtained, and there is (or should be) adequate laboratory accommodation for those investigations without which radium therapy must be an empirical, costly, and dangerous procedure. In this policy of concentrating radium treatment at a relatively few special centres the Radium Commission, the Medical Research Council, and the British Empire Cancer Campaign are all in complete accord. These were the main features of medical interest in the fifteenth Silvanus Thompson Memorial Lecture, and we commend them to the very careful consideration of our profession. In general, such technicalities and discussions are buried in "reports" and "proceedings" which a busy practitioner has neither time nor inclination to read. It is, however, essential that they should be brought under his notice—at any rate as far as concerns their main points—since it is upon the general practitioners that the education of the public in these matters ultimately depends. Recommendations and pronouncements by experts will have but little permanent effect on the mind of the average layman unless they are backed up by the opinion of his own doctor. That is quite as it should be, and the general practitioner has an opportunity of helping to put radium therapy upon the best and soundest basis by recommending patients to go to those institutions where the policy outlined by the Radium Commission is carried out to its fullest extent. Upon the purely physical side of the radium question this country is easily in the first rank: there is no reason why it should not attain an equally eminent place in radium therapy. The issue lies in our own hands. Only by unselfish and disinterested co-operation between radiological science, surgery, and medicine can the ideal be attained.

[1] Radium as a Pharmaceutical Poison, *Lancet*, July 23rd, 1932, p. 221.

# SYPHILIS OF THE STOMACH

Gastric syphilis, and more particularly gastric ulcer due to syphilis, is a disease of which we know very little, chiefly because so few proved cases have appeared in the literature. It is interesting, therefore, to note two cases recently reported,[1 2] in which there can be no doubt in the matter. The first was that of a man aged 48, with a history of eight months' "stomach trouble," frequent vomiting, loss of weight, but no haematemesis or melaena; there had been a chancre three years before. On examination a mass was felt in the epigastrium, and gastric analysis showed marked retention and no free hydrochloric acid. The Wassermann reaction was positive in both serum and cerebro-spinal fluid. At operation the distal two-thirds of the stomach were found to be thickened and rubbery, with enlarged glands along both curvatures. The diseased portion of the stomach was resected, and the patient made an uninterrupted recovery and was well two years later. Examination of the tissue removed showed a haemorrhagic ulcerated and scarred area with plasma-cell, round-cell, and polymorphonuclear infiltration; a good deal of endarteritis was also present. The picture was fairly typical of syphilis, but no spirochaetes were seen. This may have been due to the fact that the patient received two small doses of arsphenamine a few days before operation. The second case was that of a negro aged 50, with a two months' history of vomiting, melaena, and loss of weight. He had had a "sore" when a young man. On examination a mass was felt in the epigastrium, and a barium meal showed an annular defect involving the distal third of the stomach, with partial pyloric obstruction. The Wassermann reaction of the serum was positive. The lower third of the stomach was resected, and the patient made an uneventful recovery. Examination of the tissue showed appearances similar to those in the other case, and spiral forms were demonstrated. Rabbits were inoculated with portions of the stomach and glands, and positive results were obtained from both sources, thus proving the case up to the hilt.

Syphilis of the stomach is from time to time diagnosed clinically, but not always on sufficient grounds. In 1898 Flexner could find only fourteen undoubted cases in the literature, and Chiari only one case in ninety-eight necropsies on syphilitic subjects. In 1925 Hartwell examined the records of 200 reported instances, and concluded that in only twenty-seven of these was the case proved. Symmers found only one case in 314 necropsies, and Singer and Meyer none in about 500 syphilitic subjects. On the other hand, in the same six-year period four cases of histologically proved gastric syphilis were observed at operation. As to the frequency of clinical syphilitic gastric ulcer opinions differ. Various French authorities give figures from 10 to 28 per cent., and Loeper found the Wassermann reaction positive in from 43 to 70 per cent. of all gastric ulcers, and explains the high figures by a sensitization to pepsin caused by syphilis. Stokes quotes the Carman-Eusterman criteria for diagnosis of gastric syphilis. These are briefly as follows. Clinically, the average age is 35, as compared with 45 in non-syphilitic ulcers and 54 in cancer. The average duration of symptoms is two years; the course is progressive and not intermittent; appetite is good; the patient is undernourished, but not cachectic; pain is relieved by vomiting; there is a low capacity of the stomach, with subacidity; haemorrhage is unusual; the evidence of syphilis is clinical and/or serological. *X*-ray examination shows a filling defect of gastric outline, hour-glass stomach, diminution of gastric capacity, lessened pliability of gastric wall, and absence of peristalsis.

We know that syphilis may affect the stomach at any stage—early, latent, tertiary (as gumma), and in neurosyphilis. It may be an acute, chronic, or diffuse gastritis. Ulcer is said to be caused by an endarteritis completely blocking a vessel, or by a breaking-down gumma—ulcer and gumma may exist side by side. In a series of forty cases collected by Stokes, thirty-seven gave a positive Wassermann reaction, and twenty-five gave other collateral evidence of syphilis, mainly in large viscera, bones, or skin. This author considers that syphilis is a commoner cause of gastric ulcer than is supposed. In any case in which the diagnosis is not clear a Wassermann reaction should be carried out. In addition there is the therapeutic test. Where it is not a question of urgency, and carcinoma can reasonably be excluded, this is well worth trying. If the patient is not relieved by the ordinary treatment of simple ulcer, and yet improves rapidly on anti-syphilitic treatment, the conclusion is obvious. Gastric syphilis improves almost magically under arsenobenzol injections. There can be little doubt that if a routine Wassermann test were carried out in all cases of gastric ulcer, especially in patients of from 30 to 45 years of age, a good many of these would never come to operation.

[1] Harris, S., and Morgan, H. J.: *Journ. Amer. Med. Assoc.*, 1932, xcix, 1405.

[2] Morton, C. B.: *Arch. of Surg.*, 1932, xxv, 880.

## IDIOPATHIC STEATORRHOEA

The term "steatorrhoea" was originally reserved for the symptom of a fatty diarrhoea of the type due to pancreatic insufficiency. As it is too useful a word to be confined strictly to this comparatively rare phenomenon it has come to be employed as denoting any condition of excessive loss of fat by the bowel, usually but not necessarily accompanied by diarrhoea. It is used in this sense by Drs. T. Izod Bennett, Donald Hunter, and Janet Vaughan[1] in the interesting and valuable paper which they have recently published on what they have called "idiopathic steatorrhoea." They present the particulars of their investigations of a series of fifteen cases in which steatorrhoea, judged not to be of pancreatic origin, was common to all. Associated with this a disordered calcium metabolism was a constant finding, accompanied in all cases by changes in the bones, such as florid rickets, osteoporosis, or osteomalacia. Tetany, as might be expected, was present or latent in the majority of the cases. Anaemia was

[1] *Quart. Journ. Med.*, 1932, N.S.I., 603.

common but of no constant type: hypochromic anaemia, hyperchromic megalocytic anaemia, and erythroblastic anaemia were all found. Many of the series showed dilatation of the colon, and in some instances skin lesions and infantilism were also present. The different signs and symptoms of this syndrome, it will be seen, centre round the steatorrhoea. This is well known to be associated with excessive loss of calcium, which, in its turn, is responsible for the bone changes and tetany. It is also known to produce infantilism (as in coeliac infantilism), anaemia, and dilatation of the colon. The authors therefore, having satisfactorily excluded sprue as the cause of the malabsorption of fat in their cases, and having no other explanation of this symptom to put forward, can hardly be criticized for labelling their syndrome "idiopathic steatorrhoea." They have, however, gone a step further, and have added as a subtitle, "Gee's disease." In so doing they have raised some further questions of considerable interest. It is evident that they have avoided the term "coeliac disease," even though used by Gee himself, because of its present association with a disorder of childhood, and they wish to lay emphasis upon their view that a similar condition may be found originating in adult life. Of their fifteen cases twelve gave a history dating back to childhood or infancy, although they were not seen by the authors until the years of adolescence or adult life, and there is no difficulty in agreeing that these were all cases of coeliac disease. It therefore becomes of great interest to know why their lot was so much less fortunate than that of most sufferers from this disorder, for it is usually held that with treatment these children attain a fair degree of physical health and stature. From the full case reports provided by the authors it does not appear that any of these twelve patients were either diagnosed or treated correctly during their early years. If this is so, we may be indeed grateful to the authors for informing us of what may come to pass in cases of coeliac disease, arising in childhood, which neither receive correct treatment nor, as is probably not uncommon, recover spontaneously. On the further and more difficult question whether the authors have made good their claim that coeliac disease may make its first appearance in adult life, readers will be able to form their own opinion from the case reports supplied.

## PARALYSIS IN POLIOMYELITIS

In an article appearing at page 1098 of this issue, Dr. Jean Macnamara of Melbourne describes in detail the use of a special adjustable frame in the treatment of poliomyelitis. In November this year a considerable part of the *Canadian Public Health Journal* was devoted to a contribution by the same author, in which she dealt with the general principles involved in the treatment of the paralyses of this disease, the management of early cases, and the provision of organizations for after-care. Here, as in her present communication, emphasis is laid on the importance of assisting the natural processes of recovery, and of the two factors which work against this—namely, fatigue of the neuromuscular unit and stretching of surviving muscle fibres. Relaxed muscles gain as much ground as extended ones lose, and it is important to realize that at the onset of the disease, when it is too early to decide which muscles are paralysed, those which are of greatest economic importance to the individual can be favoured by relaxation. At a later stage it is usually possible to determine which muscles require the advantages of relaxation to a greater extent than their antagonists. The author gives details of the use of splints in connexion with various muscle groups, and emphasizes the need of showing special favour to the calf and hamstring muscles, the glutei, hip adductors, and deltoid. Splinting requires modification at frequent intervals during the first year, while it is to be remembered that no arbitrary time limit can be set to the process of recovery in partially paralysed muscles, which may in some cases continue to improve for six years or more. Of auxiliary methods of treatment Dr. Macnamara mentions warmth, saline baths—to allow gentle movement and to alleviate tenderness—and muscle re-education. Here a special warning is issued against the dangers of allowing "trick movements," and against the damaging effects of fatigue and too early weight-bearing. A comparison of the organizations which exist in different countries for the after-care, rehabilitation, and training of crippled sufferers from the disease makes interesting reading.

## THE FLYING DOCTOR IN AUSTRALIA

For more than four years "outback" settlers in an area covering a quarter of a million square miles of some of the most isolated country of Australia have had the services of a "flying doctor." In a lecture at the London School of Hygiene and Tropical Medicine on December 8th, illustrated by lantern slides and a cinematograph film, Dr. W. D. Walker of Adelaide, who has spent several years in the Australian interior, described the origin and development of the world's first civil aerial medical service. He paid a high tribute to the pioneer of medical services among these sparse and scattered populations—the Rev. John Flynn, superintendent of the Australian Inland Mission—comparing his work with that of Gorgas in Panama, Antle in British Columbia, and Grenfell in Labrador. Twenty years ago Mr. Flynn dreamed of a chain of hospitals, and realized his dream by the establishment of thirteen of them, each staffed by two doubly certificated nurses. This provision, of course, considering the magnitude of the territory and the isolation of its pioneers, was still inadequate. The advent of wireless and aviation, however, changed the whole situation, and in May, 1928, at Cloncurry, in Western Queensland, an aeroplane was commissioned to carry a doctor to remote places in response to wireless summons. Small and inexpensive wireless transmitters, with a sending radius of over 600 miles, their power derived from small, foot-pedalled generators, were next evolved, by the ingenuity of Alfred Traeger, and distributed among the more isolated homesteads. At first it was necessary for the operator of these instruments to learn Morse, but recent improvements have enabled messages to be automatically translated into Morse and sent out upon the ether by simply tapping a keyboard similar to that of a typewriter. At the central station they are retranslated, medical advice or instructions are sent back by wireless telephone, or, if the doctor's visit is necessary, a reply is forwarded that the "flying doctor" is on his way to a spot where

a white sheet and the smoke of a small fire indicate the landing ground. During the first year of the service Dr. St. Vincent Welch—who had already been twenty years or more in both general and consulting practice before taking up this romantic role—flew 20,000 miles to attend 255 patients, and held forty-two consultations in twenty-six different centres entirely without mishap, and each subsequent year the results have exceeded expectation. The area of the flying practice is equal to that of Germany, Austria, Switzerland, and Denmark combined. Contributions towards the service have come from employers and employed, from private donors, and—at least until the economic depression took its severest form—from Government subsidies, for the Government has realized that the health of the people of the interior is a national concern. In addition to the pilot, the plane has accommodation for doctor, nurse, patient, and one relative, but it is hoped soon to be able to accommodate an anaesthetist as well, and to carry a fully equipped surgical unit. It is also proposed carefully to chart large areas which at present have not been aerially surveyed, and to provide more landing grounds as well as radio clubs and service patrols. Thus, with the help of modern invention, a mantle of safety, for whites and aboriginals alike, has been spread over a territory equal to half Europe, and the anxieties of the settler's wife when approaching maternity, or of the settler himself in view of the possibilities of accident or grave illness far away from skilled help, have been to a very large extent allayed. Several other points were mentioned by Dr. Walker. One was that this work has been undertaken in hearty co-operation with the British Medical Association in Australia. Care has been taken not to encroach upon the province of doctors already in practice in less sparsely populated regions. The medical men in the flying service, of whom there have now been four, only see the patients of these doctors at the doctor's own request, and, in the event of accident or emergency, the patient is taken to the nearest outlying hospital and there left in the care of his own practitioner. The relations with the medical profession on the ground level have been most amicable throughout. The ultimate aim is to establish a national service having a number of fully equipped base hospitals working in co-operation throughout the sparsely settled regions of the continent. Another important aim of the service is to provide opportunities for post-graduate study abroad for doctors at the completion of their term of service. Air Vice-Marshal Sir David Munro, who presided at the lecture, spoke as one who was "in at the birth" of the use of aircraft for ambulance purposes. The R.A.F., he said, was the pioneer in this respect. It was a good many years since, on the outbreak of dysentery in a regiment many marches north of Bagdad, several hundred men were transported by air to Bagdad in one day, where they were placed in hospital, and the epidemic terminated. Sir David also recalled meeting Mr. Flynn at the International Conference of Aviation in 1929, and expressed his surprise at the remarkable state of efficiency to which this unique service had already been brought. In this country, he added, ordinary communications were so rapid, and hospitals so general, that people here could hardly realize the great boon of air transport of medical aid in these vast continental areas.

## PROFESSOR W. S. THAYER

We regret to announce that Dr. William Sydney Thayer, emeritus professor of medicine, Johns Hopkins University, Baltimore, died on December 10th at the age of 68 from coronary occlusion. One of the best-known physicians in the United States, Professor Thayer, a former president of the American Medical Association, was professor of clinical medicine from 1905 to 1918, and physician-in-chief from 1918 to 1921 at Johns Hopkins University, where he succeeded the late Sir William Osler as professor. He was a member of the Association of Physicians of Great Britain and Ireland, Fellow of the American Academy of Arts and Sciences, and corresponding member of several European medical associations and societies. A frequent visitor to Great Britain and France, Professor Thayer in 1927 delivered the Bright Oration at Guy's Hospital to commemorate the centenary of the publication of the first volume of *Bright's Reports on Medical Cases*. The oration was published in our issue of July 16th, 1927 (p. 87). In 1930 he gave the George Alexander Gibson Memorial Lecture at Edinburgh, when he presented an analysis of about four hundred cases of acute endocarditis. Professor Thayer was chief consultant of the Medical Services of the American Expeditionary Forces, 1918–19, and deputy commissioner of the American Red Cross Mission to Russia in 1917. One of the first among American physicians to associate himself with studies on malaria, he published in 1895, with John Hewetson, *The Malarial Fevers of Baltimore*, and in 1897, *Lectures on the Malarial Fevers*; in 1925 his *Studies on Bacterial (Infective) Endocarditis* were published. The esteem and affection in which Professor Thayer was held by his friends and colleagues was shown in 1927, when they presented to the Johns Hopkins Medical School an endowment fund for the "William Sydney Thayer and Susan Read Thayer lectureship in clinical medicine." Of considerable linguistic and literary ability, Professor Thayer published in 1926 a book of his own poems and translations of Russian poetry in English.

## THE NOBEL PRIZES

The Nobel prizes were presented to Sir Charles Sherrington, Professor E. D. Adrian, and Professor Langmuir by the King of Sweden at Stockholm on December 10th. The assembly included all the members of the Swedish Royal Family, as well as the Diplomatic Corps, together with five previous recipients of the Nobel prizes. At the banquet which followed Professor Adrian recalled the fact that eight members of Trinity College, Cambridge, had previously been to Stockholm to receive Nobel prizes, and that he was the ninth.

We regret to announce the death, on December 13th, of Mr. E. Treacher Collins, F.R.C.S., consulting surgeon to the Royal London Ophthalmic Hospital. We hope to publish an obituary notice in next week's issue.

A plaque in memory of the late William Dobinson Halliburton, M.D., F.R.S., professor of physiology, 1890–1923, has been erected in the Halliburton Laboratory of Physiology at King's College, London, and will be unveiled to-day, Saturday, December 17th, at 2.30 p.m., by Sir Frederick Gowland Hopkins, President of the Royal Society.

# ANNUAL CONGRESS OF RADIOLOGY

The British Institute of Radiology, with which the Röntgen Society is incorporated, held its annual congress at Westminster on December 7th, 8th, and 9th. The main congress consisted of two medical sessions and one session for physical and technical papers. The memorial lectures bearing the names of Mackenzie Davidson and Silvanus Thompson were delivered, the final event being the presidential address by Professor F. L. Hopwood, which took the unusual form of an excursion, illustrated by the cinematograph, into some alluring by-paths of radio-physics. An exhibition of apparatus was held in connexion with the congress.

The official opening was by Sir GEORGE NEWMAN, who took occasion to survey the radiological advance in several fields, especially the radium treatment of cancer. By means of radium, he said, it was now possible to remedy 70 per cent. of skin cancers. In cancers of the mouth and tongue radium had in a number of cases replaced surgery, and in cancer of the uterus had relieved a substantial proportion to which surgery had no access; in cancer of the breast also it was proving a valuable auxiliary. Sir George Newman expressed the hope that the example of the University of London in establishing a chair of radiology would be followed by other bodies.

## TREATMENT OF LATE *X*-RAY EFFECTS

A feature of the meeting was a demonstration of cases of *x*-ray workers and others who had sustained damage. Dr. N. S. FINZI said that these late *x*-ray effects were of great rarity. Among patients they should never occur as the result of a diagnostic examination except when the patient concealed from the radiologist the fact that he had been recently radiographed. Telangiectasis might occur from one to three years after *x*-ray treatment, its appearance being more frequent after *x* rays than after radium. Dr. Finzi also mentioned atrophy of the skin, thickening of the skin, skin cracks, benign or malignant neoplasms—these were less likely to occur when there had been a single acute burn than when there had been a prolonged series of exposures—and late ulcerations. In one case which he showed the ulceration had started as long as eleven years after treatment. Acute inflammation of the subcutaneous tissues occurred rarely; in his own long experience he had seen only three cases. Late ulceration might occur in the mucous membrane as well as in the skin. The treatment of acute inflammation and the early stage of ulcer was complete rest and protection of the part, even immobilization in plaster. The application of irritants or hot fomentations was disastrous. In the early stages the injection of a vaccine made from a culture of the organisms might result in complete and rapid recovery. He suggested the use of various emollients for ulcerations, also zinc ionization. Telangiectases could sometimes be removed by high frequency or the static machine. Cracks in the nail yielded to a cellulose solution. Warts could often be treated by paring or rubbing down the horny part with emery paper; when troublesome they must be excised, as must epitheliomata.

A paper on plastic surgery in cases of chronic radio-dermatitis and radio-necrosis, by Sir HAROLD GILLIES and Mr. A. H. MCINDOE, was read by the latter. More than forty such cases, he said, had passed through their hands. In chronic ulcerative radio-dermatitis complete excision was followed by rapid relief of symptoms and freedom from carcinomatous change, but the treatment could not be considered as satisfactory without the replacement of excised tissues with healthy skin. Workers with *x* rays sometimes suffered from burns of the hand or face, an effect which might be attributable to two processes—namely, vascular obliterative changes in the arteries and loss of function of the cells in the irradiated area. Of acute necrosis only two cases had been seen by the authors. In late *x*-ray burn with ulceration the ulceration was due to infection. Indications for operation were: pain, itching (often intolerable), ulceration and discharge, deformity from contraction, bad cosmetic appearance, and epitheliomatous change. The surgical treatment fell into the two stages of excision and repair, but in the vast majority of cases both stages were carried out at one sitting. Excision was quite simple, and should extend to the healthy tissue on all sides. The method of repair depended on the quantity of tissue lost, the age and sex of the patient, and the position of bone. In general three methods were available: a Thiersch graft, a full-thickness dissected graft, and direct flaps. For treatment of the hands the Thiersch graft only was employed; any attempt to put a full-thickness graft on the hand would lead to an unpleasant appearance. So far as results were concerned, radio-dermatitis and necrosis were cured as soon as excision was completed. A number of photographs illustrating successful repair were shown.

Dr. STANLEY MELVILLE, in the ensuing discussion, mentioned that for the relief of the peculiar tightness of the skin and the unpleasant cracks he had found nothing so effective as a new German ointment, "Desitin-Röntgensalbe," the basis of which was pure cod-liver oil. It had an excellent effect in softening the skin, almost getting rid of warts, and stopping cracks. Dr. J. H. DOUGLAS WEBSTER spoke of the low incidence of these injuries. During the last eleven years at the Middlesex Hospital he had been responsible for 40,000 *x*-ray treatments and 5,000 radium treatments, and had seen only three or four patients who had given him any anxiety at all on account of local damage, and only one case in which he feared damage to the lung. His opinion was that practically all cases of *x*-ray or radium damage were due to overdosage—not necessarily theoretical overdosage, but overdosage taking into account the condition of the patient—for instance, in relation to skin sensitiveness. He did not believe in *x*-ray idiosyncrasy. Dr. G. B. BATTEN said that he had worked with *x* rays for more than thirty years, and had suffered no injury at all beyond a slight trouble which necessitated the amputation of the tip of a finger. He had been a pioneer in the treatment of ringworm by *x* rays, and here, out of 5,000 cases, he had found only one bad case of baldness of the scalp—namely, a case in which the scalp had been made sensitive by a previous application of picric acid. Dr. L. A. ROWDEN said that he too had been working for more than thirty years and was unscathed. He mentioned the extreme lateness of the appearance of damage in some cases. It had been mentioned that telangiectasis might appear after three or four years, but he had seen at least one case in which, although there had been no recurrence of the malignant condition for which the original treatment was given, a rather marked telangiectasis appeared in the area after twelve or fourteen years. A lady whom he had treated during the war went on perfectly well until a year ago, when a pimple developed in the neck—the treatment had been for exophthalmic goitre—and, the pimple having been scratched, there appeared a most virulent gangrenous dermatitis which rapidly broke down.

Mr. PERCIVAL COLE said that a proportion of these radio-dermatitis cases did go on to malignancy, and he thought the malignant cases resulted rather after a number of small repeated *x*-ray doses than after one complete dose. In treating lymphatic areas with the one-gram bomb an intense reaction had been observed to follow, but it was evanescent, and hitherto had not appeared to lead to secondary changes in the skin. Dr. R. CONNELL mentioned that one authority had advocated a preliminary dose of ultra-violet radiation in cases where it was desired to give a very heavy dose of *x* rays, more than the skin would stand. Dr. HOPE FOWLER was unable to remember any case of radio-dermatitis occurring in his practice during the last twenty-five years, although since the war he had used intensive radiation. In replying on the discussion, Dr. FINZI said that Dr. Webster had suggested that *x*-ray idiosyncrasy was a myth, and yet had stated that cases of exophthalmic goitre were especially susceptible to *x*-ray damage. What was this but idiosyncrasy? Dr. Finzi's belief was that idiosyncrasy had a definite existence.

### CLASSIFICATION OF TUMOURS FOR RADIO-SENSITIVITY

A classification of tumours in relation to radio-sensitivity was brought forward by Dr. RALSTON PATERSON. He defined radio-sensitivity as the relation between the lethal dose for tumour tissue and the lethal dose for skin, and divided tumours from this point of view into four groups: (1) radio-sensitive, (2) epitheliomata, (3) adenocarcinomata, and (4) radio-resistant tumours; in the first of these the lethal dose for the tumour was much less than for the skin, in the second about the same, in the third definitely greater, and in the fourth much greater. The treatment for radio-sensitive tumours, if practicable, was external irradiation by $x$ rays; for epitheliomata, localized irradiation by radium; for adenocarcinomata, surgical extirpation; and for radio-resistant tumours, surgical extirpation or "growth restraint."

Dr. W. M. LEVITT complained that the basis of Dr. Paterson's classification presumed that the relative sensitivity of growths and of skin was unaltered by technique. He had suggested that all radio-sensitive growths, however small and localized, should be treated by radiation; the speaker believed that to be a mistake. His classification was unsound because it was well known to be possible to produce the most intense local effects at depth, with mere skin erythema, or perhaps not even that. Dr. G. VILVANDRÉ pointed out how tumours absolutely identical histologically behaved in different ways in different patients. Dr. G. F. STEBBING agreed with Dr. Levitt that by carefully adjusted external beams a lethal dose could be given to almost any tissue without burning the skin that overlay it. Dr. A. E. BARCLAY referred to an unknown factor which he called $x$. If this factor was present, no matter how radio-sensitive the tissue, the tumour would recur later after radiation treatment. It was the same with surgery: operation $- x$ = a cure; operation $+ x$ = always failure.

### RADIOGRAPHY

Three papers on radiographic subjects were read. Dr. J. N. JACOBSON spoke on fractures of the upper end of the femur in the aged, pointing out the definite alteration which occurred in the senile femur, especially in women, and most pronounced in the neck. He offered a nomenclature of fractures as subcapital, transcervical, trochanteric, subtrochanteric, and evulsion of the great trochanter. In old age the trochanteric was much more common. He described the indirect force, of the nature of a twist, which brought about the fractures in old people, and showed a number of radiographs. Dr. G. F. STEBBING said that it was commonly affirmed that fractures of the neck of the femur did not unite. He did not believe in any of the elaborate theories as to the causation of failure to unite; the fracture would unite if the fragments could be brought into position and held there long enough, but in the case of the neck of the femur the one "fragment" was the whole of the lower limb, and the other the whole upper part of the body.

Dr. T. D. OVEREND described some relief studies of the stomach and colon, and gave an account of an appliance he had had constructed for obtaining a controlled radiogram under graduated compression. His pictures showed how the scope of gastric and colonic investigation was enlarged by the relief, but Dr. A. E. BARCLAY uttered a word of warning about the relief pattern, and the desirability of studying first the physiology involved before passing to pathological appearances. Finally, Dr. E. ROHAN WILLIAMS discussed the $x$-ray investigation of carpal injuries, based on personal observations of fifty-three cases seen during the last fifteen months. He stressed the responsibility of the radiologist in seeing that adequate treatment of scaphoid fractures was afforded, and that there was $x$-ray control of union throughout.

### COST OF RADIUM

The lecture by LORD LEE OF FAREHAM, with his trenchant comments on quack radium remedies, was in part reported in the last issue (p. 1069). Speaking of the cost of radium, the chairman of the Radium Commission suggested that the extremely high price of this substance was, under existing conditions, its best safeguard. At £15,000 a gram there was not much risk of its becoming a "best seller." But what if it became cheap? Until recently one foreign company had had practically a monopoly of the world supply, and had kept the price as high as the world would stand. But if other sources of supply should be developed a price-cutting competition might arise, and radium become comparatively cheap. Would such a state of affairs be to the benefit of the world, or would new risks outweigh the apparent advantages? Before such questions could be answered more would have to be known than at present about the true value of radium as a therapeutic agent, and that might require many years of intensive and patient investigation. If radium could be acquired cheaply by anyone a new peril would arise, and Government control of a drastic character would be imperative. Lord Lee believed that the existing stock of radium in this country was sufficient for present needs if properly used and organized. The real deficiency was not of the element, but of persons competent to use it. He briefly sketched the already announced policy of the Radium Commission.

Among the physical and technical papers presented to the congress was a notable one by Dr. G. W. C. KAYE and Mr. W. BINKS on the international comparison of the "Röntgen," the unit of quantity of $x$ rays. It related how agreement had now been reached between the National Physical Laboratory, the Bureau of Standards at Washington, and the corresponding organization in Germany as to the determination of this unit—an achievement of precision in measurement which will be of great value to the physicist and the medical worker. At the outset of this investigation the differences between national standards were as much as 50 per cent.; now the range of difference has been closed down to within 1 per cent. Dr. H. FRANKE of Hamburg showed some extraordinary radiographs, the work of the "rotalix" tube, which has special focusing devices. Mr. NORMAN KEMP discussed the uses of $x$ rays in industry, and Mr. W. E. SCHALL described a 500 kV Villard unit. A notable contribution was the Mackenzie Davidson lecture, by Dr. JAMES CHADWICK, assistant director of the Cavendish Laboratory at Cambridge. This constituted a brilliant discourse on the neutron.

## THE ANNUAL DINNER

The closing event of the congress was the annual dinner, over which Professor HOPWOOD presided, with Lord Lee of Fareham and Sir Holburt Waring as the principal guests. The health of the Institute was proposed by Dr. DOUGLAS WEBSTER. Professor HOPWOOD, in response, said that the Institute had succeeded in achieving certain memorable tasks which it had set itself some years ago. It had educated those concerned into awareness of the dangers of the agents which they had to employ, and had organized committees to deal with the measurement, and others with protective methods. The Institute had never been more prosperous or with a larger membership. In response to the toast of "The Guests," which was proposed by Dr. V. E. PULLEN, two brief speeches were made by Lord Lee and Sir Holburt Waring. Sir HOLBURT WARING referred to the aspiration of radiologists, which had been voiced at the dinner, for representation on the General Medical Council. The function of the Council on the side of education—and with its other functions radiologists as such would hardly be concerned—was in the main to legislate for the ordinary practitioner; it was not concerned so much with the higher diplomas. As for the establishment of such higher diplomas at universities, he thought they needed to be a little clearer than at present as to the relation between radiology, in the particular sense of practice, and medicine. It might be that a higher diploma of this kind would most fittingly find a place in the faculty of science rather than in that of medicine, and he could conceive such higher diploma or degree being given by the University of London.

# HEALTH OF THE SCHOOL CHILD

## *SIR GEORGE NEWMAN'S REPORT**

### Adenoids and Tonsils: Acute Rheumatism

The Board of Education has been caused some anxiety by the great increase in the number of operations on tonsils and adenoids, and the Chief Medical Officer has repeatedly warned practitioners not to indulge too freely in this measure. In 1923 the number of tonsillectomies officially recorded in London was 7,656, whereas in 1931 it was 18,178, despite a slight decrease since 1929. The report discusses the indications for this operation and the disadvantages of unnecessary intervention. It concludes that the operation may be of great value when there is real obstruction or repeated sepsis having a toxic effect on the child's health. The evidence for any prophylactic value is conflicting.

The number of new cases seen at the rheumatism centres shows an increase of 29 per cent., and the number of children admitted to special hospitals for prolonged convalescent treatment was more than double that of the previous year. This does not indicate an increase in rheumatism, but in the treatment available. Special studies of case-histories are being made. It appears that the child who develops rheumatism before the age of 9 is much more likely to have a damaged heart than a child who is infected when it is older. Apparently the most potent factor in an increase in rheumatic incidence is a rainfall below the average. Dr. Gerald Slot has investigated the conditions under which patients sleep, and has emphasized the importance of a room and/or bed to itself for the rheumatic child. He finds that these children are much better off at a special school than playing about the streets as a result of being given a " rest " from work. One of the chief difficulties experienced by school medical officers is the differential diagnosis between the ailing child infected with rheumatism and the child not so infected ; a reliable skin test is much to be desired.

### Defective Vision

A special inquiry into the vision of school children has brought out three main points: the comparative rarity of emmetropia (2 to 3 per cent. on admission, and 10 per cent. on leaving) ; the rarity of myopia in children under 5 and its gradual increase as age advances ; and the great preponderance of hypermetropia at all ages, although it diminishes in later years. There appears to be a definite " educational " type of myopia, and the younger the child the more serious the myopia. If the child is suffering merely from " educational " myopia it seems hardly fair to place him under the limited opportunities of a special class. On the other hand, it is not yet known whether the ordinary school curriculum can convert the " educational " into the pathological myope, or how the two types can be distinguished at an early stage. Records show that a considerable number of myopes were emmetropes or low hypermetropes during early school life. It is obvious that a certain number of visual conditions are missed with examination by Snellen's long-distance chart. It is not practicable at present to examine every child by refraction, but it is suggested that a +1 sphere might be placed in front of the eye before the child is passed as normal. If the eye is hypermetropic this simple measure will not affect the vision, but the acuity of the emmetropic and myopic eye will be affected, the latter perhaps as much as to 6/36. The report also suggests that the nurse should make a point of examining for visual acuity in order to fill in the hiatus between the admission and the intermediate examinations—a period of great importance for the eyes. The co-operation of the teacher is also of the greatest possible value, as he alone is in a position to recognize the early backwardness and disability that indicate defective vision, and to see that children with glasses wear them as ordered.

* Concluded from page 1071.

### Disorders of Hearing

Few authorities as yet have a comprehensive and efficient system for ascertaining and treating defects of hearing. It is a common complaint among head teachers of schools for the deaf that the children are not admitted early enough. The number of partially deaf children ascertained is 1,741, and the total accommodation in special schools is 222. Examination of hearing acuity has not yet become a routine, and the forced whisper test is unreliable. The audiometer, however, is likely to provide a simple and accurate test for hearing that can be applied by the school nurse to a large number of children in a short time. It has become the custom to refer to an otologist all children with nine or more units of sensation loss by this test. Most cases are due to inflammation extending along the Eustachian tube. Much benefit results from treatment when the deafness is slight and recent. The report summarizes the services needed for these children as follows: complete and scientific ascertainment ; particular attention to improvement in function as well as to the cure of pathological conditions ; a definite scheme for specialized education ; and the prescription, where necessary, of an appropriate hearing apparatus.

### Dental Treatment

The school dental service has continued to make progress, approximately 55 per cent. of the children on the registers having been examined during the year, an increase of 8 per cent. on 1930. There has been a growing tendency to concentrate conservative treatment on the permanent teeth—obviously a desirable measure if choice has to be made between filling a permanent tooth and a temporary one. Shropshire has a scheme which might well be imitated: the school dentists have to report to the school medical officer, in respect of each permanent tooth found unsavable, the reason why it was unsavable. Two interesting features of the year's work are the active interest now taken by parents and children in the preventive and curative aspects of dentistry, and the wider view that is generally being taken of the possibilities of prophylaxis. Here again the teachers undoubtedly wield the paramount influence. The report refers to the recent work on the dental caries of Tristan da Cunha, Mr. Sprawson's report on the value of raw milk, and the investigation of Mrs. Mellanby and Dr. Lee Pattison on the importance of vitamin D and calcium. The part played by diet is being more and more stressed by school dentists. The report remarks that it is somewhat strange that we seem to know more of the dental conditions of Tristan da Cunha than of our own children. The incidence of dental disease is not known, or the effect upon it of geographical, environmental, and hereditary conditions, and habit. Sir George Newman appeals to school dentists to investigate these matters.

### Diet of School Children

Everyone recognizes that diet is of primary importance to the child, but unfortunately a diet sufficient in quantity may cause ill effects from deficient quality. To be adequate a diet must supply enough calories (of which not less than 5 per cent. are derived from animal protein), right amounts of calcium, phosphorus, iodine, and lime, and all four vitamins. The Advisory Committee on Nutrition said that if a diet consisted of dairy products, fatty fish (for example, herrings), eggs, and fresh salads, its mineral and vitamin contents would probably be sufficient. Sir George Newman declares that it is the clear duty of the school medical officer to ensure that the children under his care have a diet which fulfils these conditions. Variety, cooking, and service must also be considered. Evidence for the value of milk is steadily accumulating, but the total ration should be mostly taken at the morning and evening meals. The only signs of healthy growth which are readily applicable to groups of children are increase in weight and height: for practical purposes the minimum desirable is 5½ lb. and 2 in. per

annum. The cost of an adequate diet should not be great: various institutions have proved that it can be supplied for four or five shillings per head per week. For day scholars the education authority provides a mid-day meal which should be not less than two-thirds of the daily needs of the child. In practical terms this should be: *for protein*, a pint of milk, four ounces of beef, six ounces of mutton, four and a half ounces of cod or herring, or about two and a half ounces of cheese ; *for fat*, rather more than an ounce of butter, dripping, or lard. The vitamins would be supplied by milk, raw vegetables, and fruit, and either butter or vitaminized margarine. For ill-nourished, delicate, and necessitous children special provision must, of course, be made, and the report states that their dietary should be planned to supply the total daily requirements, in case the home diet is insufficient. Soups cannot be relied upon for supplying the essential animal proteins.

Last year 48,000,000 meals were provided by 157 local authorities, and 320,000 children were fed, a considerable increase over the previous year. It is gratifying to learn that at present, at any rate, the national crisis does not seem to have affected the child population. The figures for malnutrition are practically the same as in the previous year. The position must, however, be carefully watched, and dietary instruction to mothers and children must play its part, besides the provision of food at school. It is estimated that 800,000 children are now receiving milk under the National Milk Publicity Council's scheme. Bottles, hygienically sealed and fitted with straws for drinking, containing one-third of a pint, are supplied at one penny all the year round. Milk clubs have been formed in about 150 areas, and when the parents cannot pay for the milk the local authority does so, but the schemes are mainly self-supporting.

### THE HEALTHY CHILD

There are at present many obstacles in the way of reporting that any given child is healthy and getting the best possible out of life. Sir George Newman attempts the definition of a healthy child as one whose growth is proceeding naturally, whose nutrition is normal, and whose bodily systems are functioning without impairment. This state is not synonymous with physical fitness. Poor response to performance tests does not necessarily indicate subnormal health. Further difficulty is put in the way of an estimate of health by the very great variety of models on which Nature builds the child. Sir George Newman groups the signs of health as: growth, the weight-height ratio ; physical activity ; happiness ; and physical efficiency—the adequate functioning of the organs and systems and ability to carry out the ordinary tasks imposed on the body. He is anxious that the health, and not only the diseases or defects, of the child should be considered at school medical inspections. The education of the body is as much a function of the education authority as the education of the mind. The essential requirements for health are food, air, exercise, rest, cleanliness within and without, an active and occupied life, "to know thyself and be moderate." All these things have to be learned in youth. Instruction in the art and science of healthy living is steadily gaining ground. This interpretation of health education, however, demands of the teacher a planned health programme for the three or four years of senior school life and co-operation with parents.

The primary business of physical education is to encourage healthy physiological development, and no one who has seen the mental and physical improvement resulting from physical training can doubt its efficacy. Great help is given to teachers by the employment of an organizer, as a source of enthusiasm and encouragement and of post-graduate training. The report publishes some most interesting extracts from organizers' reports, showing the scope of their influence. Organizers and inspectors are watching recent developments in physical training, and modern methods are being introduced into schools. Vacation courses are held for teachers.

# Ireland

### Dangerous Drugs Bill (Northern Ireland)

On the second reading of the Dangerous Drugs Bill (Northern Ireland), moved by Viscount Charlemont, Professor T. Sinclair said there were drugs outside the scope of the Bill which were used by people who derived a certain amount of knowledge of them from advertisements in the lay press. They might be called potent drugs, and among them was extract of thyroid gland, which was obtainable from the chemist without a prescription as a remedy for obesity. It was especially used by the female sex in the present craze for "slimming," and if taken over a long period was harmful. Tuberculin was another drug which could be obtained with similar ease. This might be used to secure temporary immunity from tuberculosis in an animal. It was also possible to obtain without prescription an extract of the pituitary gland for use in midwifery. If used by unpractised hands this drug might lead to paralysis of the mother and child. These drugs should be classified under the general title "potent drugs," and a third section should be added to the Bill to deal with them as well as with drugs of addiction. Professor Sinclair added that the Northern Ireland Pharmaceutical Society had no disciplinary powers, and had to wait for a conviction before it could strike off a member's name. Lord Charlemont did not think the drugs mentioned came within the scope of the Bill, but he promised to bring Professor Sinclair's remarks to the notice of the Government.

### Biological Society of the Royal Colleges

At the inaugural meeting of the Biological Society of the Royal Colleges of Physicians and Surgeons, at which Mr. A. B. Clery presided, the president-elect, Mr. J. Owens, delivered an address on the progress of thoracic surgery, illustrated by several lantern slides. In proposing a vote of thanks, Sir W. I. de Courcy Wheeler, who came over from London to attend the meeting, described his recent tour in Canada and the United States, and gave an account of the Mayo Clinic in New York.

### Protection of Children

In a paper read before a meeting of the Statistical and Social Inquiry Society of Ireland, at the Royal Irish Academy, Dublin, Sir Thomas Molony, K.C., stated that, with one exception, there had been no recent legislation in the Irish Free State dealing specifically with the law relating to children or young persons. A very short Act (No. 24 of 1929) had extended the provisions of Section 58 of the Children Act, 1908, to meet the case of a child who was not an orphan but who was found destitute, and whose parents were unable to support it. The Act provided that such a child (subject to certain safeguards) should be sent to an industrial school, but it had no further operation. In England and other countries the law relating to children or young persons had received much attention. The Home Office Committee on the Treatment of Young Offenders made many recommendations, most of which had been carried into effect, either by administrative action or by the Children and Young Persons Act of the present year. A few recommendations, notably the establishment of observation centres, had not been included in the Act for financial reasons. It provided, among other things, that no paper should publish an anonymous advertisement offering to undertake the care of infants. The Act had so far protected infant life, and it endeavoured to alleviate the evils of child employment, but it had also to deal with juvenile courts and to improve the legislation dealing with juvenile offenders

and with juveniles in need of care or protection. Every child who was in need of care or protection, and every child of 8 who had committed an offence, came under the jurisdiction of the Juvenile Court, and remained so until he reached the age of 17. The juvenile courts had been an unqualified success.

# Scotland

### Development of Mental Services

In an address, delivered at the City Chambers, Edinburgh, on December 7th, on "The care and treatment of mental disease in Scotland in the light of modern scientific thought," Dr. Hamilton C. Marr, Senior Commissioner on the General Board of Control for Scotland, said that with increased knowledge there had been a gradual evolution in the medical treatment of mental disorders. It had come to be recognized that there was nothing in the nature and symptoms of mental disease which prevented the majority of patients from being treated on exactly the same lines as persons suffering from bodily illness. The advantages of treatment in the early stages of mental disease had been clearly demonstrated in the great incidence of mild mental disorder during the war, and persons suffering from mental disorder were not now neglected until they became certifiable. Certification was generally regarded as a stigma, and should be limited to those cases in which the patients, being a danger to themselves or others, refused to avail themselves of care and treatment, so that they had to be detained under legal warrant. Dr. Marr presented a scheme for making Scotland a unit in regard to the treatment of mental disease. Under this plan Scotland would be divided into four districts—grouped round the four teaching centres—each of which would have a psychiatric hospital with an outdoor department conducted on the same lines as a general hospital, and subsidiary clinics connected with the various smaller hospitals of the district. Such central hospitals, working in close connexion with the medical faculty of the four Scottish universities, would not only be available for private patients, but also for patients from the local authorities of combined districts; the smaller hospitals would not then need to possess such elaborate modern medical equipment for diagnosis, treatment, and research. He believed that if local authorities were permitted to use the equivalent of the old lunacy grant, or part of it, for these purposes, there would be a reduction in the incidence of mental disease, and the accumulation of chronic mental cases would be notably less. Such unified work would certainly be less wasteful of labour and money, and would make for increased efficiency.

### The Crippled Child in Scotland

Dealing with the care and cure of crippled children in the south-eastern area of Scotland in his address on December 5th to members of the Scottish Women's Club, Mr. W. A. Cochrane said that, while there had been important developments in orthopaedics in the last few years, there had been much biological degeneration going on in the great cities, so that the healthy mind in the healthy body demanded their special attention at the present time. It was now recognized that children who were taught the correct use of the body learned their lessons better, and that physical development was a basis for later mental development. The work of the orthopaedist was in the first place to train teachers, so that such conditions as flat feet, round shoulders, and flat chest might be avoided. With regard to the effects of fractures and surgical tuberculosis, there was a considerable organization to deal with them, but the orthopaedist often felt that he wanted to go out into the highways and byways, and, through public health services and medical practitioners, get in touch with cases at an early stage. Deformity could then be treated, not by operation but by massage or exercises, so that the child might never arrive at the stage where he had to suffer the ordeal of an operation. The growing child required after-care, for there was a tendency to relapse, and a comprehensive scheme for such treatment would shortly come into operation at the new Hospital for Crippled Children at Fairmilehead. This scheme covered children from 5 to 16 years of age, in an area comprising Edinburgh and the South-East of Scotland, including Fife, and involving a population of about a million people. It was estimated that there were nearly a thousand children of school age in this population awaiting active care for which existing facilities were inadequate. At the open-air hospital at Fairmilehead children were observed to put on weight and improve in general condition in two weeks, but the great need was for after-care clinics, and it was hoped that local county associations would take up this work. There were ten counties to be dealt with, and local clinics must be run by local effort, the cost of maintenance of such a clinic being about £100 yearly.

At the annual meeting of the Edinburgh Cripple and Invalid Children's Aid Society, held on December 9th, Lord Sands, who presided, said that the society had existed for some thirty years, with the object of exercising care, cure, and after-care in regard to cripple children. The society had 762 cases on its register, of whom 276 were children. These figures were explained by the fact that although the society existed primarily for children, it did not lose touch with its cases in later life. Dr. Norman Carmichael pointed out that the society was in great need of voluntary workers to visit the children in their homes and to see that treatment was being properly carried out. He made a special appeal for what might be called "medical cripples." Rheumatism in young children did not produce deformities of bone or joints, but in 1927 it had been calculated that the total incapacity for work as the result of rheumatism cost the national health insurance £5,000,000 and lost to the country some £17,000,000 in wages. A great deal of the crippling of rheumatism occurred in the young child, and although the provisions for the acute stage of rheumatism were ample, those for convalescence and after-treatment were inadequate. In Scotland there was no institution to deal with the rheumatic child, who was often sent home to convalesce in most unsuitable surroundings. This society, however, had been doing pioneer work in supplying convalescent treatment and teachers to educate the children when they were unable to go to school. Mr. D. Stewart Middleton pointed out that treatment of cases had frequently to be continued for years, and the society encouraged parents and others to carry on a long patient system of treatment. Cripples were often unusually intelligent, but required education of a special type; the average cripple, deprived of physical exercise, tended to become interested in art, literature, and science. In order that these children might have their opportunity, such a society as this was absolutely necessary, and he commended it to the support of the public.

### Royal Infirmary of Edinburgh

At a meeting of the League of Subscribers to the Royal Infirmary of Edinburgh, Mr. Alexander Maitland, one of the managers of the Infirmary, who presided, said that everyone interested in the institution would have to assist in raising a considerably extended income in the near future. There was a waiting list now amounting to some

3,000, and, although this showed that the good work of the Infirmary was appreciated, it was a constant source of anxiety to the managers. In the present year the pressure on this waiting list had been somewhat eased by the opening of Beechmount House, which had been equipped as a hospital with thirty-four beds at a cost of £10,000. The upkeep of this auxiliary would require between £3,000 and £4,000 per annum. The contemplated extension of the Infirmary on the neighbouring ground of the old George Watson's College, for which £260,000 had been recently raised, would provide 240 beds for obstetrical and gynaecological treatment. This would liberate three wards with ninety-six beds, through which an additional 2,000 patients could be passed in the course of a year, but which would require a further annual expense for maintenance. To meet this about £40,000 of additional income would be required in the next two or three years. With regard to paying patients, Mr. Maitland said the managers believed in the open door of admission for all patients, but considered that a fee-paying block would fulfil many needs in providing the best surgical and medical aid for persons who were unable to pay nursing home fees, and would do much to decrease the waiting list. There was no suggestion of making admission to the Royal Infirmary conditional on payment. Mr. Russell Paton, organizing secretary of the League of Subscribers, submitted a report for the year to September 30th last which showed that a sum of £21,117 had been collected from groups of subscribers. Fully one-half of these groups, which numbered 824, had this year shown a decrease in the amount subscribed, but this had been balanced by an increase in the sums received from others. Provincial districts had subscribed sums amounting to £5,665, but it had to be remembered that in most of the provincial towns, including such centres as Dunfermline, Kirkcaldy, Hawick, Galashiels, Falkirk, and Grangemouth, the claims of district hospitals had first to receive consideration. In the mining areas served by the Royal Infirmary the systematic contributions of the mine workers had amounted to £9,000, and were quite apart from the contributions made under the League of Subscribers. A continuous endeavour was being made by some 120,000 wage-earners in the city and surrounding country districts (including the mine workers) to subscribe systematically £32,600 towards the maintenance of the Royal Infirmary, in addition to support for their local hospitals.

### Children's Clinic in Dumbartonshire

A new children's clinic erected by the County Council of Dumbartonshire for the eastern division of the county was formally opened at Kirkintilloch by the convener of the Public Health Committee. The building, which is of two stories, has been erected and equipped at a cost of £5,500. It contains rooms for medical officers and nurses, a waiting room for mothers, an ophthalmic clinic, a general treatment clinic, an electrical treatment room with ultra-violet ray lamp, an orthopaedic classroom for remedial exercises, a dental clinic, an operating theatre, and a recovery ward with ten beds, where children may be retained for a night after operation.

### Presentation to Scottish Doctor

A presentation, in the form of a Chesterfield suite and a silver tray, suitably inscribed, was made to Dr. John Sinclair, Bo'ness, Linlithgowshire, by a committee representing patients and friends, to mark the completion of fifty years' practice in the district. Dr. Sinclair, who is a native of Lochgilphead, graduated M.B. at Glasgow in 1879, and although he is now 79 years of age, he is still in active practice.

# England and Wales

### Liverpool Medical Institution

A special general meeting of the Liverpool Medical Institution was held on December 1st for the purpose of admitting Lord Moynihan of Leeds to honorary membership. The president (Professor R. E. Kelly) was in the chair, and some seventy-five members and associates were present. Mr. R. Craig Dun delivered an introductory oration, in which he spoke of Lord Moynihan's services to the art of surgery, his skill as an operator, the world-wide fame of his contributions to surgical literature, his zeal in connexion with medical societies, and the number of such societies which he had brought into being. The president, in formally inducting the new honorary member, presented him with a certificate of membership, inscribed on vellum. Lord Moynihan expressed his pleasure at being elected an honorary member, and referred to those he knew so well in Liverpool. On the evening of the same day the annual dinner of the Institution was held at the Adelphi Hotel, 171 members and guests being present. Lord Moynihan was the guest of honour, and proposed the toast of "The Liverpool Medical Institution," to which the president replied. Other guests present included the Lord Mayor of Liverpool, the Bishop of Liverpool, Lord Cozens-Hardy, the stipendiary magistrate (Mr. Stuart Deacon) the city coroner (Dr. G. Cecil Mort), and the presidents of the medical societies of the surrounding districts—Southport, Birkenhead, Wallasey, Chester, and Wigan.

### Vital Statistics for 1931

Part I (Medical Tables) of the Registrar-General's Statistical Review, 1931, is now on sale at H.M. Stationery Office, price 6s. net. Its principal features are as follows. The number of births registered in the year was 632,081, giving a rate of 15.8 per 1,000 persons living. This rate is 0.5 below that for 1929 and 1930, hitherto the lowest on record, and constitutes a new low record. The death rate was 12.3 per 1,000 persons living, 0.9 above the rate for 1930. That rate was, however, the lowest ever recorded, largely owing to the exceptionally mild weather in the first quarter of the year. The higher rate for 1931 is the reflection of the more severe weather of the first quarter of that year, and the consequent higher death rate, the rates for the other three quarters showing very little variation. Infant mortality was similarly affected, and the deaths of children under 1 year of age numbered 66 per 1,000 live births, against 60 in 1930. That year and 1928 are, however, the only years that have shown a lower infant mortality than 1931. Cancer showed a death rate of 1,484 per million persons living against 1,454 in 1930. If, however, allowance is made for differences in the age constitution of the population the comparative mortality from cancer shows a much smaller increase. Tuberculosis again furnished a new low record of 896 per million living. Puerperal sepsis caused the deaths of 1.59 women per 1,000 live births and stillbirths, 0.25 less than the rate for 1930. "Other accidents of pregnancy and childbirth" showed a rate of 2.36 per 1,000 live births and stillbirths compared with 2.38 in 1930. The death rate from suicide was 129 per million persons living, a new high record, although the increase was confined to males (189 compared with 185 in 1930), the rate for females having fallen from 74 to 73. A slow increase in this rate has been continuous for a number of years. Road accidents due to mechanical vehicles were responsible for 5,892 deaths. The figures for the last four years were 4,452, 5,196, 5,752, and 6,342 respectively. The decrease in those deaths is the first that has occurred since 1921, the figures having increased steadily from 1921 to 1930.

### Tercentenary of Apothecaries' Hall

The Society of Apothecaries of London held a Yeomanry Dinner on December 6th to commemorate the tercentenary of its hall. After the loyal toasts had been honoured by the Master, Dr. Cecil Wall, "The Society of Apothecaries of London" was proposed by Dr. V. S. Hodson, Master of the Mercers' Company. Dr. Hodson expressed his appreciation at being present at the three-hundredth anniversary of the ownership of the Society of the present hall. The Apothecaries' Society, he said, was a guild which kept in touch with its craft. His short speech was concluded by gracious compliments to the Master. Dr. Cecil Wall, responding to the toast, said that the Society entered into possession of the hall on December 3rd, 1632, and met for the first time on December 11th. At the first dinner held in the hall at the end of 1632 the Censors of the College of Physicians were guests of the Society. Dr. Wall, in an interesting account of this dinner, gave what might be called a "History of the Table." The robes of the Master and Wardens were similar to those worn at present. The floor was covered with rushes, and the diners sat on benches. Each guest brought his own knife with him and forks were not used, fingers being the chief weapons of attack. This usage accounted for the passing round of a bowl of rose water, a custom repeated that evening. The wine drunk at the dinner in 1632 was claret, which was spiced, sugared, and burnt. The spiced wine which was passed round as a loving-cup that evening was of a composition similar to that drunk in 1632 and known as Hippocras. At the conclusion of his speech Dr. Cecil Wall presented a piece of plate to the Society in memory of the occasion. In proposing the health of the visitors Mr. Arthur Greenwood said that he had become a member of the Society without paying any fee or taking examinations. Among the guests present he welcomed by name the Master of the Grocers' Company, Mr. Lawrence H. Tufnell, who, he was glad to say, was unlike the Grocer in the *Canterbury Tales*; Sir Arthur Robinson, as representative of the greatest department of State—the Ministry of Health; Professor William P. Graves of Harvard University; and the Prior of St. Dominic's. Responding for the guests, Mr. Tufnell said that he had come to the dinner as a sorrowing parent urging the apothecaries to return to the parental bosom. Mr. Tufnell briefly recounted the history of James I's charter to the Society, mentioning that Gideon de Laune was the traditional founder of the Society. As a member of the Grocers' Company, he said, they were very proud of their child. Sir Arthur Robinson, also replying on behalf of the guests, expressed their gratitude to the Master and members of the Society for the royal entertainment of the evening. He graciously returned Mr. Greenwood's compliments by saying: "the better the Minister the better the Civil Servant." Professor Graves, as a member of the American medical profession, congratulated the Society on the three-hundredth anniversary of its ownership of the hall.

### The Slum Problem

A meeting for the discussion of clearance areas and improvement areas held at the Royal Sanitary Institute on November 29th, with Lord Balfour of Burleigh in the chair, was attended by H.R.H. Princess Louise, Duchess of Argyll. Dr. James Fenton, medical officer of health for Kensington, who introduced the discussion, spoke of the possibilities under the Housing Act, 1930. Up to March 31st, 1932, only twenty-one improvement areas in all had been declared (eighteen by eight boroughs and urban district councils and three by rural district councils), whereas 420 clearance areas had been declared by 125 authorities. It might be that, during this early period of the Act's operation, local authorities had not unnaturally paid first attention to those tracts of property which fell within the definition of a clearance area—namely, those which were in such a condition as to require sweeping away altogether. The characteristics of a clearance area were easily recognized, and the procedure was akin to, though not identical with, that for dealing with unhealthy areas, which was in operation under the earlier Housing Acts. The improvement area procedure in the Act of 1930, on the other hand, was novel, and the delimitation of tracts of property suitable for this new method of improvement and control might well appear more difficult. But the advantages which it presented were very substantial and, furthermore, the procedure was economical. This point had added weight at the present time when the conservation of the resources both of local authorities and the Exchequer was of special importance.

## CORRESPONDENCE

### The G.P. and the Curriculum

Sir,—I think Dr. Arnold Gregory's suggestion in the *British Medical Journal* of December 10th (p. 1078) should meet with general approval.

There is little doubt that the majority of students are "swamped in detail," and too many fail "to acquire a scientific outlook." The causes are not far to seek. On the one hand we have the rapid progress of science, and, on the other, the fact that each examiner is presumably engrossed in his own subject and has, perhaps, made some contribution to it. He cannot be blamed if he sometimes fails to view his own subject, or his own contribution, in correct perspective. But in so far as his examination questions indicate such a failure, he becomes responsible to that extent for the difficulties of the situation. Enthusiasm for a subject, however, is necessary for a solution of its problems, or for success in teaching it. Formulation of the requirements necessary for the training of general practitioners as distinguished from specialists would doubtless help to secure better results, but it would not eliminate this personal factor, of which complaint is, I think, occasionally justified.

Why should the General Medical Council not appoint a representative subcommittee to which examination papers would be submitted for approval before being set to candidates?—I am, etc.,

Manchester, Dec. 12th. J. Stavely Dick.

### Psychology in the Curriculum

Sir,—No doubt the new Commission that is to deliberate on medical education will receive much advice from those engaged in teaching the more specialized subjects of the curriculum. It is natural that the specialist whose work absorbs all his energy and enthusiasm should regard thorough teaching of his department as an essential part of a doctor's training. I am not writing, however, to push my own special subjects before the notice of the Commission, but to urge that a big turn should be given to clinical medicine towards teaching the vast importance of the so-called "functional" or non-organic conditions.

It is not possible, or necessary, to give detailed suggestions in a letter, but I would draw attention to the great predominance of functional conditions in general medical practice and also many forms of special practice, for the management of which the student has never been prepared. It is useless to say that he will soon learn when he has been in practice for a few months. Experience shows that the undue emphasis placed on organic conditions, and the attitude almost of contempt and ridicule towards

the neuroses in hospital practice, act as a lasting bias in this direction during his whole professional life. So long as no importance is placed upon teaching the structure and mechanisms of the mind, how can a man in after-life be expected to understand the nature and treatment of neuroses and other conditions of "symptoms without signs," which will form the bulk of his future practice?

No student realizes the dual nature of the patient's entity, of which his mind and its states are at least of as much importance as his body in the production of inferior health. His idea, quite naturally, of the paramount importance of the physical part is still further strengthened by the attention he sees paid to mechanical forms of diagnosis. When he sees diagnosis built almost solely on an *x*-ray picture, chemical analysis, and a growth in a culture tube, is it not likely that he develops a mechanistic view of the body and its functions? Not only is he not taught the vast amount of suffering resulting from the neuroses, but he also does not realize that some of the organic states, in which he is so interested, are the direct results of states of mind, operating uncorrected over long periods. His contact with, and study of, the hospital class of patient does not help him to understand the great prevalence of nervous visceral disturbances found in private practice.

The great advances of psychology are lost on the clinical student, for either he has no systematic teaching of the subject as one of first and fundamental importance, or else it is taught as a stray and fancy subject which need not be taken seriously as it will not figure in the examination. I do not regard psychology as a specialism like obstetrics or ophthalmology, but as a basic part of medical science comparable with organic physiology, without which it is impossible to begin to understand a large number of patients. We turn out the qualified student thinking in terms of diseases: we should equip him to think of patients and their personalities. Psychology should be given equal prominence in the curriculum with organic physiology, and run as a parallel course during the study of anatomy and physiology. During the later years systematic time should be devoted to the study of the neuroses and their many clinical expressions. To ensure a sufficient dignity to these new studies they should be recognized in the examinations for qualifying diplomas.—I am, etc.,

London, W.1, Dec. 12th. ALECK BOURNE.

## Research in Mental Disease

SIR,—I have read with some interest, not unmingled with surprise, the correspondence that has continued in the *Journal* since October 22nd and up to the present time under the above title.

My surprise is that two methods of research in mental disorders and their treatment should be placed in such direct antagonism—namely, the subjective or psychical and the objective or laboratory method. It is also unfortunate that the advocates of both sides should be urging their separate claims by minimizing the importance and value of each other's work.

Laboratory investigations are referred to by one of your contributors as a "craze for objectivity," and the treatment based upon such findings as "blind shots" with remedies derived from one sphere to relieve symptoms in another. Psychological investigations, on the other hand, are gravely stigmatized by another with ruthless scorn, contempt, and intolerance, thus surrounding the discussion with a heated atmosphere. One of your correspondents regards the treatment of patients in a general hospital—and both sides seem to regard the latter as a vaunted paragon—as a "depersonalization of the relation of the physician to the patient," because the latter is a "case," and there is no obvious "transference" evident. This he stigmatizes as a "flight from the patient." Another correspondent asserts that biochemical discoveries made in the laboratory cannot logically be regarded as the cause of mental disorder, and that laboratory findings lack discrimination and accuracy. This suffices to afford a plea for the study of behaviourism, which implies life without consciousness and as a series of conditioned reflexes.

The serious statement is made here that psychological treatment is neglected in mental hospitals. A lady contributor is more emphatic than any of your other contributors. She animadverts upon the staff of mental hospitals, and describes them as having but little conception of the processes of work in incipient mental cases—(do hospital physicians fall into the same category?)—and therefore ignorant of the method of approach from the psychological side, which she supports by advocating a special doctor to be in charge of every four or five patients and remain with them day and night! In her own words, such an investigation is "infinitely better than the installation of expensive apparatus for hydrotherapy, heliotherapy, radiography, and biochemistry," which she asserts to be the shibboleth of so many modern mental hospitals. Whether this opinion is based upon experience, or whether it be a mild satire or a humorous aside, is not clear, but others with long experience of mental hospitals know only too well that mental restoration is almost invariably associated with bodily gain in weight and improved physical health, which is often greatly helped by the despised apparatus referred to. A later correspondent with practical knowledge in America (it is believed) and in this country, suggests that there should be a compromise between physical and mental pathology, and that the ideal staffing should be one composed of mental, medical, legal, and administrative expert knowledge, together with their numerous and varied satellites—a staffing which he then describes as the "flight of the physician from himself."

Your last contributor, a lady who, through a long period of sympathetic advocacy, has urged the early treatment of mental disorder, is led by her earnest pleading to a slight error in the interpretation of the Mental Treatment Act, 1930. She states that the voluntary patient is compulsorily detained for three days in order to be certified. The Act clearly states that any voluntary boarder may leave after giving three days' notice. This is only to safeguard such a person by enabling the authorities to communicate with the friends and to help him or her to leave in safety. Also, she states that the voluntary patient is entered in a "lunacy register," but there is no mention of such a register in the Act. Up to the present time the voluntary patient realizes and appreciates the provisions of the Act for his special treatment, as over 1,300 persons have placed themselves under care in hospitals and homes, and the numbers are increasing.

It is not edifying to find records of acute differences of opinion between doctors who pose as specialists in the treatment of mental disorders, however plausible or euphuistically these differences are expressed relating to the best methods of approach in such cases. Both the subjective and objective are successful methods. This cavilling, if I may use the term, tends to destroy confidence in what, through a long evolution, has become the best home for the perturbed and broken mind. I may be allowed, with the experience of over half a century, to say that in the remote past the treatment of mental disorders relied greatly upon humanity and common sense. The fact that psychology belongs to the realm of speculation and hypothesis rather than upon exact scientific knowledge led a young man in his thirties, Sir William

(then Dr.) W. J. Collins—a statesman and an administrator as well as a distinguished surgeon—in 1892 to persuade the London County Council, of which he was afterwards chairman, to found and promote a research laboratory at Claybury for the scientific investigation of mental disorders. No laboratory for London existed before this, and I may add that, until my colleagues at Claybury started the training of mental nurses, no such school for nurses existed previously in any London asylum. It was Dr. Collins's influence that also induced the Technical Education Board to establish six scholarships to be attached to the laboratory, one of the holders being Dr. (now Sir) Henry Head. The laboratory was visited personally by Virchow, and received his cordial approval. What the laboratory has effected under the direction of its able and distinguished director, Sir (then Dr.) F. W. Mott, is abundantly testified in its reports, the first of which was prefaced by its founder, who was himself the first to apply thyroid treatment for myxoedema by transplantation of the sheep's thyroid into a human being (April 2nd, 1891). The work carried on in the laboratory (now removed to the Maudsley Hospital) has enabled endocrinology to become a branch of therapeutics, it has helped to control the far-reaching nervous effects of syphilis, based upon the discovery of Schaudinn in 1905 and that of Noguchi in 1909, and it has also carried out researches into malaria and biochemistry. This is one method of approach to the mind.

It is, to say the least, an unseemly procedure for advocates of different methods of investigation to be uttering pontifical counsel and to detract from the honest work of others, when they might join hands in the crusade of relief for the most crippling, disabling, and appalling of human affections. I trust you will permit me to call *Pax*!—I am, etc.,

London, S.W.5, Dec. 13th. ROBERT ARMSTRONG-JONES.

*** This correspondence may appropriately end with the publication of Sir Robert Armstrong-Jones's seasonable plea.

## Poliomyelitis: Differential Diagnosis

SIR,—I am grateful for the additional information given by Dr. Craig and Dr. Lowe as to the findings in the cerebro-spinal fluid in their case of alleged poliomyelitis, but I remain unconvinced of their diagnosis.

They state that the fluid, apparently more than thirty-six hours after the onset of paralysis, showed 200 cells, of which 78 per cent. were polymorphs, and that lumbar puncture on the next few days maintained the same picture. But in poliomyelitis, although the polymorphs may amount to 80 or 90 per cent. of the total in the *pre*-paralytic stage, there is a rapid change to a mononuclear type of pleocytosis, and by the time paralysis appears the mononuclear cells outnumber the others. During the succeeding days the fluid is less and less likely to show any increase of polymorphs, and rapidly returns to a normal state.

Thus it seems to me that the argument from the cerebro-spinal fluid in this case is against the diagnosis of poliomyelitis. I have already presented my argument against that diagnosis on the clinical history and signs. It is, to my mind, unfortunate that so great an authority as Batten should have included mention of cases with signs of a transverse lesion of the cord in the Lumleian lectures, to which Dr. Craig and Dr. Lowe refer. The evidence there presented, as Batten himself admits, is of the kind based upon negative conclusions only. He wrote: "By excluding the common causes of transverse lesion one is justified in suggesting that poliomyelitis may be the causal factor." We have learned something more of the common causes of transverse lesions since these words were written. Cases of the kind described by Drs. Craig and Lowe are, I submit, not uncommon, and whatever their cause, in their manner of evolution as well as in their clinical picture, they present factors which should be clearly distinguished from those of poliomyelitis.—I am, etc.,

London, W.1, Dec. 10th. C. P. SYMONDS.

## Nasal Treatment in Asthma

SIR,—In the discussion on vasomotor affections of the nose and their relation to bronchial asthma in the *Journal* of December 10th I am stated to have "reported" two cases in which nasal treatment—drainage of an infected antrum in one and removal of polypi with relief of pressure from a middle turbinal in the other—had cured asthma. In reality I "exhibited" these two cases and reported the results of treatment in many others. Thus, in a comparatively unselected series of 120 *hospital* cases, there were thirty-three of practical cure and sixty-seven of improvement, and in a similar series of fifteen *non-hospital* cases the results were recovery in eight or nine, great improvement in three (*British Medical Journal*, December 19th, 1931), relief in one, unknown in two. Out of eighteen consecutive cases of *asthma in children* at Brompton Hospital, in whom nasal abnormalities were found, complete relief was obtained in fifteen and partial relief in three (*Journal*, p. 1060).

Mr. Howarth's opinion that the results of nasal treatment have been disappointing is, I think, unnecessarily pessimistic, and I feel sure that if he now repeated his investigation of twenty-five years ago in the light of the late Professor Dixon's crucial experiments, and with the advances in rhinological technique which have taken place in that time, he would obtain results which would be by no means unsatisfactory.—I am, etc.,

London, Dec. 12th. JAMES DUNDAS-GRANT.

## "Mazoplasia" and "Cystic Hyperplasia"

SIR,—The extract which Sir Lenthal Cheatle has quoted from the review of Professor Boyd's book contains no suggestion that mazoplasia and cystic hyperplasia are the same thing. The context shows this clearly enough.

"Views are changing with regard to the nature of chronic mastitis, which is now considered by some to be a hyperplasia rather than a true inflammation, and an alteration in the nomenclature appears to be called for. The author has adopted the term 'cystic hyperplasia,' while admitting that it is not ideal, since cysts are not always present. Sir Lenthal Cheatle has already given the name 'mazoplasia' to the lesion. . . ."

"Lesion" here clearly refers to chronic mastitis, not to cystic hyperplasia.

The matter discussed in the review is the practice of using new names prematurely in textbooks intended for students. The resulting confusion is well exemplified in Professor Boyd's adoption of the term "cystic hyperplasia" for chronic mastitis. A student who has been taught that all forms of the disease are included under the name "cystic hyperplasia" would be puzzled by Sir Lenthal Cheatle's statement that mazoplasia (one form of the disease) has nothing to do with cystic hyperplasia. New names are very well in treatises such as Cheatle and Cutler's work, *Tumours of the Breast*, but I contend that in works specially intended for students, such as textbooks and museum catalogues, the old names should be retained until the new ones have received some measure of general recognition.—I am, etc.,

December 11th. THE REVIEWER.

## Addison's Disease

SIR,—Complaint is made that the treatment of Addison's disease by injections of cortical extract is very expensive. I have found that almost as good results can be obtained by giving a tabloid of adrenaline last thing at night at least three hours after any food, and first thing in the morning over an hour before breakfast. Glandular products taken on an empty stomach act much more strongly than if given after meals.

If in Addison's disease the von Pirquet test is positive, there is a good chance of effecting a cure by giving injections of tuberculin, beginning with a small dose, slowly increased over a long period. A patient whom I treated more than seven years ago with adrenaline and tuberculin is well, and earning her living as a domestic servant.—I am, etc.,

Hove, Dec. 8th. WALTER BROADBENT, M.D., F.R.C.P.

## Varicella in Old Age

SIR,—Dr. J. D. Rolleston, in his paper on this subject (December 3rd, p. 1007) speaks of his patient, aged 76, as the oldest victim of varicella on record. There is, however, a case reported in the *Bristol Medico-Chirurgical Journal* for 1926 (vol. xliii, p. 169), by Dr. R. E. Overton, as an example of severe herpes zoster and varicella occurring in a patient aged 93. In putting this case forward as an instance of the association of these two diseases Dr. Overton wrote as follows:

"Three explanations of this association have been advanced. First, it is suggested that the eruption described as varicella is really that of herpes zoster generalisatus. To the present instance this hypothesis does not seem applicable. The two eruptions each ran their course typically and separately. That of herpes was strictly limited to the original area, and so were the nervous phenomena which lingered after its subsidence. The varicella rash, on the other hand, was scattered after its normal fashion over the trunk, and its component elements passed through the stages customary in varicella.

"Second, it is sought to explain the association away as a mere coincidence. Both for and against this hypothesis a great many arguments have been marshalled, and a single case can scarcely move the balance of opinion in either direction. During the period when this patient's case was under observation about a dozen examples of chicken-pox, on the one hand, and a similar number of cases of herpes, on the other, were noted in the same district. Was this a coincidence, or was it a further piece of evidence in support of the third hypothesis?"

Long and happy association with Dr. Rolleston in the work of the *Medical Annual* has taught me a profound respect for his encyclopaedic memory, and it is therefore with some diffidence that I venture to bring this case to his notice.—I am, etc.,

Bristol, Dec. 6th. CAREY F. COOMBS.

⁂ The above letter was written by Dr. Carey Coombs from the Bristol General Hospital when he seemed to be recovering from the heart attack to which he succumbed three days later. An obituary notice appears at page 1126.

SIR,—As Dr. J. D. Rolleston seems to attach some importance to these matters I can inform him that his case of chicken-pox, aged 76, does not by any means constitute a record. I had under my care in November, 1931, two ladies, aged 80 and 88 years respectively, admitted to the North Western Hospital from St. Mary, Islington, Hospital, who were typical cases of chicken-pox. I fancy the record established by the latter case will not readily be broken! Both were returned to St. Mary none the worse for their chicken-pox.—I am, etc.,

North Western Hospital, Hampstead, N.W.3, Dec. 8th. ALEXANDER JOE.

SIR,—It may interest Dr. Rolleston to know that some years ago I attended a child aged 6 with varicella, and about a fortnight later her grandfather, aged 82, who was living in the same house, contracted the ailment. The symptoms were typical, though mild, and he made a complete recovery, and as far as he could remember he had not suffered from the complaint in childhood.—I am, etc.,

Bexhill-on-Sea, Dec. 10th. G. LOWELL WEBB, M.D.

SIR,—Dr. Rolleston's article prompts me to record the following case, which occurred in my practice several years ago. It has two features of interest, as my patient was a retired bachelor of 81 years of age, and was at the time suffering from herpes of his left arm. The herpetic eruption preceded the exanthem by three days, the latter being in all respects typical of varicella. Constitutional disturbance was moderate, and uninterrupted recovery ensued.—I am, etc.,

Glasgow, Dec. 10th. W. H. STIRLING ARMSTRONG.

## British and Foreign Spas

SIR,—A letter, which appeared in the *Star* on November 25th has been forwarded to me for comment. I have no wish to enter upon a controversial correspondence in the lay press upon the comparative merits of German and British spas, but when a qualified medical man, who claims to know something of both, implies that German spas do more for poor patients than the home spas one not unnaturally wonders whether he has ever visited the Devonshire Hospital at Buxton, the Royal Mineral Water Hospital at Bath, or the Harrogate Royal Bath Hospital.

The writer of the letter asks: "Is it not a fact that every German spa has to take its complement of State-insured and poor patients?" So far as State-insured patients are concerned the majority of the German spas are glad to have them for financial as well as for humanitarian reasons. But it *is* a fact that *all* the spas comprising the British Spas Federation co-operated with the members of the Spa Practitioners Group of the British Medical Association and the National Conference of Friendly Societies in drawing up arrangements for insured persons to obtain the benefits of spa treatment. The spas agreed to supply all treatments for a sum of 18s. per week, and a sufficient number of spa doctors undertook the medical care of these patients for a period of three weeks for a fee of one guinea. These terms compare favourably with the charges at the German spas to the Krankencassen patients in 1926 and 1927, in which years I had an opportunity of investigating the subject in Germany.

No one with an intimate knowledge of German spas would wish to belittle their achievements, particularly in view of their praiseworthy endeavours to remain in the front rank during the very lean years they experienced after the war. We, too, have had difficult times, and may have still more difficult years ahead, but one effect of the exchange rates going against the pound sterling is that during the past season many Britishers who are familiar with Continental spas have taken their "cure" at a home spa this summer for the first time. Some have missed the complete change of social and climatic conditions, but with very few exceptions they have found that the actual treatments are quite as well, and in many cases better, given in the home spas, than in the foreign spas.

The writer of the letter in the *Star* refers disparagingly to the "post-prandial utterances" of Sir Thomas Horder. The remarks of Sir Thomas Horder, whether pre- or post-

prandial, are generally recognized as worthy of serious consideration, and those of us who practise in the British health resorts are grateful to him and to those other medical men who are reminding the public that in health as in other matters one can "Buy British" and get value for money as well as have the satisfaction of being patriotic by doing so.—I am, etc.,

Harrogate, Dec. 5th. GEOFFREY HOLMES.

## Disciplinary Powers of the G.M.C.

SIR,—I have recently been much concerned at the fact that there is no right given to members of the profession to appeal against the findings of the General Medical Council. Obviously their decisions may be of much greater importance than those of any judge when he passes sentence on a criminal, who at least has the right to appeal to a higher court.

I am not questioning the ability of the General Medical Council, but its members, I believe, have no special legal training. It is well recognized that even judges may make mistakes; their decisions are, in fact, not infrequently reversed on appeal. I believe that it is in the best interests of the profession that its own affairs should be dealt with by a Council of its members, but I feel very strongly that appeals should be allowed on at least two grounds: (i) that the evidence submitted to the Council would not have been allowed in a Court of Law; (ii) that the Council's findings were against the weight of the evidence. Such appeals might be heard by a judicial committee of the Privy Council.

I am uncertain whether all medical students are now taught all those things which the General Medical Council will not allow. I certainly was not, and I can believe that there are others whose knowledge on the subject has been picked up haphazard and is, in consequence, certainly not great.—I am, etc.

York, Nov. 30th. G. A. HAYDOCK, M.B., B.S.

## Memorial to Malton Doctor

SIR,—We shall be grateful if you will give notice in your paper of a very deserving appeal.

Your readers are aware of the outbreak of typhoid fever in Malton, Yorks, which culminated in the death of Dr. George C. Parkin, who contracted typhoid fever and died on December 3rd, after exhausting his reserves of strength by continual and unsparing attendance on the victims.

Dr. Parkin, who was only 31 years of age, leaves a widow, a son 2 years old, and an unborn child. He made such provision for them as he could afford, but, cut off in the beginning of his career, he was unable to provide for the education of his children. We wish to raise a fund to be devoted to this purpose as a memorial to the heroic sacrifice he made in the cause of others. We who worked with Dr. Parkin and admired his devotion to duty and great ability do earnestly commend this appeal to all who are able to help.

Contributions may be sent to Mr. James Crooks, F.R.C.S., at the Hospital for Sick Children, Great Ormond Street, London, W.C.1.—We are, etc.,

H. A. T. FAIRBANK,
Consulting Surgeon to the Hospital for Sick Children, Great Ormond Street, W.C.

JOSEPH W. LEECH,
Consulting Surgeon to the Royal Victoria Infirmary, Newcastle-on-Tyne.

W. T. GORDON PUGH,
Medical Superintendent, Queen Mary's Hospital for Children, Carshalton, Surrey.

December 11th.

# Obituary

## CAREY FRANKLIN COOMBS, M.D., F.R.C.P.

Physician, Bristol General Hospital

The death of Dr. Carey Coombs has left a gap in the medical profession in the West of England that will be hard to fill. He was a man of singular friendliness. Built to a large model physically and mentally, he was gifted with style and clarity in both speech and writing. Full, restlessly full, of ideas for betterment and progress, he would meet opposition without ill feeling. He would leave a meeting with his arm in that of his doughtiest opponent, and, with disarming courtesy, vow to overcome his antagonism by ruthless onslaught. Thus, more often than not, Dr. Coombs carried his plans to completion, though it was characteristic of him that he never stayed to calculate at the start whether the plan he was backing was likely to prove a winner. His unsparing energy, backed by his persuasive tongue, enabled him to accomplish many hard tasks. One plan on which he had set his heart, however, he died without accomplishing. Ever since the war, when the medical staffs of the Royal Infirmary and the General Hospital in Bristol had been united to staff the Second Southern General Hospital, Dr. Coombs had striven to make the union complete and abiding. When the late Mr. H. H. Wills offered munificent financial aid (£100,000 was the sum refused) the goal seemed almost won. Coombs's project was defeated by loyalty to established institutions and disinterestedness that scorned the temptation of endowments. He regarded this exhibition of loyal disinterest as about the stupidest obstruction he had ever met, and never relinquished the hope that he might live to overcome it.

Dr. Coombs was a splendid general physician, wise and helpful to practitioners whom he met in consultation, encouraging and comforting to patients and their relations. His special study was heart disease in all its bearings and the problem of the rheumatic child in particular. He owed this interest to his training at St. Mary's Hospital and to the lasting influence of Francis Sibson there. He had entered St. Mary's in 1896, and had won the general proficiency scholarship as well as (in 1901) the Cheadle medal. In 1901, also, he obtained the M.B., B.S. of London University, with honours in medicine and obstetrics, and proceeded to the M.D. in 1903. In 1908 he passed the M.R.C.P. examination, and was elected F.R.C.P. in 1917. At St. Mary's he had held the appointments of house-physician, house-surgeon, and medical registrar. In 1904 Coombs came back to Bristol, where he had commenced his medical studies in the old University College. At first registrar, and then assistant physician, to the Children's Hospital, he at the same time acted as museum curator to the General Hospital. In 1907 he was appointed assistant physician to the General Hospital and demonstrator of pathology to the University College. In 1920 he was appointed physician in charge of out-patients at the General Hospital, and in 1927 full physician, which post he held at the time of his death. In 1927 the University Centre of Cardiac Research was established at the General Hospital, with Dr. Coombs as director. Here, with adequate equipment and willing assistants, he was able to carry on his researches in cardiology, although the problem of financing the centre was very largely left to the director's energy—a short-sighted policy which deprives the University of much of the honour which the title of the centre might imply. The Cardiac Centre was Coombs's, and the credit belongs nowhere else, though he obtained some financial support from the Harmsworth Fund.

His solicitude for rheumatic children suffering from heart disease led him to share actively in founding the

Orthopaedic Hospital at Winford, just outside Bristol on the foothills beside Dundry. Here he seized the opportunity of establishing a "school-hospital" for his cardiac cripples, where they, with the victims of infantile paralysis and other diseases needing long rest in bed, might receive medical attention and school education simultaneously. This clamant need met with but niggardly support, to the great disappointment of even such an incurable optimist as Coombs declared himself to be. No lack of funds for his scheme could make him relax his own energies. The less money he had for his work the more he expended his own mind and body, until in the end he succumbed to a coronary occlusion, a cardiac accident which he had so diligently studied in others.

During the war he served in the Territorial R.A.M.C., both at home and abroad. Over-seas he first went to Mesopotamia, and returned in 1917 with some long-lasting illness that was never explained, and from the effects of which he never entirely recovered, although he went out bravely to France and served again as major with the British Expeditionary Force. His post-war work, although his health was but partially restored, was marked by its breadth and vigour. He not only carried on his private practice as a busy consulting physician and director of the Cardiac Centre, but he gave constant and splendid teaching to successions of medical students, and was dean of the General Hospital. He was associate editor of the *Medical Annual* and assistant editor of the *Bristol Medico-Chirurgical Journal*. At the time of his death he was an examiner in medicine in the University of London and Councillor of the Royal College of Physicians, of which he was the Lumleian lecturer in 1925. He was Chadwick lecturer in 1927, and also Long Fox lecturer (University of Bristol). In 1924 he published his one book, *Rheumatic Heart Disease*. He was president of the Bath and Bristol Branch of the British Medical Association in 1930.

Carey Coombs was born in 1879 at Castle Cary, Somerset, where his father, Carey Pearce Coombs, had practised medicine for many years. In 1904 he married Miss Nina May Matthews of Walton-by-Clevedon, who, with their four sons and one daughter, survives him. We extend to them our deepest sympathy. Had Carey Coombs been spared to the span of normal life his reputation might have spread further, but even by the age of 53 he had made a place for himself beside Budd, Symonds, and Long Fox of Bristol. J. A. N.

Dr. F. JOHN POYNTON writes: With the untimely death of Dr. Carey Coombs passes a friend bound to me by the ties of affection, regard, and comradeship. Though my junior when at St. Mary's Hospital he was deeply interested in the investigations that were being made by Dr. A. Paine and myself upon the acute rheumatism of childhood, and he never wavered when that study seemed to be a lost thing to medical thought. Eventually he became the pioneer of the fine work which has been done and is being done in the West Country on behalf of children suffering from rheumatism and rheumatic heart disease. He was a type of the best of my own county, solid in mind and frame, unfaltering and benign. Simple yet sagacious, he was a doctor who brought with him to the bedside hope, cheer, and confidence, giving of his best for the love of humanity and particularly of children. I do not dwell upon his reputation and published writings. The former was deservedly high, the latter and their teaching are living things; only the personality is gone, leaving those who knew him the poorer. It is a memory that I shall ever cherish that I should have been at Bristol and have met him on the Monday before his death. Then in his cheery way he spoke to me of a meeting he was to address at University College Hospital Medical School, when he was to give us his latest experiences upon the subject of the rheumatic child, and he expressed his deep gratitude for the loving care of his colleagues and nurses in his hospital, to which he had been taken when stricken down unconscious in the street. There was no shadow of fear, and only that outstanding devotion to his profession which I have no doubt broke even his fine constitution. Such a man makes me proud to be a doctor.

Professor A. RENDLE SHORT writes: Many consulting physicians are highly respected by their professional brethren for their work's sake; some are loved for their own sake. It is no funeral flattery, but the barest truth, to say that Carey Coombs enjoyed in full measure the double tribute. On every hand one hears the same remark—the sense of personal loss. He was an indefatigable worker, especially in the realm of cardiac research, and must have examined thousands of microscopical slides of heart muscle and thousands of electrocardiograms. He was a recognized authority on the subject all over the world. It is a tragedy that at the early age of 53 he should have been suddenly cut off by the very disease which he had studied so particularly. He was a courteous and brilliant teacher, and the students will miss him sadly. For many years he has been editor of the *Medical Annual*, that well-known publication which has for half a century done so much to keep the doctor abreast of the medical literature of the world. In his extensive private practice, as well as at the Bristol General Hospital, he brought a singular measure of skill, grace, and good cheer to his patients. But there was something more, and we loved him.

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## JAMES DUNCAN SLIGHT, M.A., M.D.

Consulting Physician to the Leicester Royal Infirmary

We regret to record the death from angina, on December 3rd, at the age of 61, of Dr. J. D. Slight of Leicester. Dr. Slight was well known locally as a physician of great ability, and his opinion, particularly on cardio-vascular abnormalities, was highly valued by his medical colleagues. Born in 1871 at Portobello, Scotland, he was the only son of John Slight, a man whose life interest was centred in missionary society efforts. He was educated at the "Edinburgh Institution," and from there proceeded to the University of Edinburgh, taking the M.A. in 1892. Proceeding to the faculty of medicine he obtained the M.B., Ch.B. in 1893, with first-class honours and "senior" medals, and became house-physician to Sir T. R. Fraser at the Royal Infirmary in 1898. Subsequently he held a similar post at Leith, and later was clinical assistant at the Royal Hospital for Sick Children. He next undertook special work in the laboratory, of which Professor Schäfer had just been appointed chief, and there, in 1900, wrote a thesis for the M.D., for which he was commended. In 1901 Dr. Slight settled in general practice in Leicester, where he rapidly became successful. In 1908 he was commissioned with the rank of major in the Territorial Force, and on the outbreak of war was called up for service in Leicester. He then held a position in which his clinical powers, great reading, and sound judgement rapidly gained him an outstanding position among his colleagues. With no previous military training he threw himself into the effort to acquire a high standard in this type of medical work—professional, administrative, and disciplinary—and his success was recognized by his being mentioned in dispatches.

At the end of the war he received the appointment of assistant physician at the Royal Infirmary, Leicester, and was promoted to be physician in 1923. At this time he became interested in electrocardiographic investigations, presented an instrument to the institution, and became medical officer in charge of the department. There followed a period of poor health, in spite of which he stuck to work

until his retirement from the active to the consulting staff in 1931. It was now regrettably obvious that his physical powers were very limited; although he was able to get about a little, receive his friends, and still take a keen interest in medicine, he was more or less of an invalid in considerable and constant pain.

Dr. Slight, although over 6 feet in height, was never of robust health, and consequently he seldom took much part or interest in social activities or sport. He was devoted to his home and his books. With his kindly, critical temperament he set a high standard for himself in his ethical and professional conduct, and was somewhat intolerant of those whom he thought failed to aspire to the same standard. He was, however, a staunch friend to many. He was a regular attendant at British Medical Association and Leicester Medical Society meetings, and a governor of University College, Leicester, of which he was a keen supporter in its inception and a generous subscriber to its funds.

# Universities and Colleges

## BRITISH COLLEGE OF OBSTETRICIANS AND GYNAECOLOGISTS

As recorded in last week's issue, the House of the College, 58, Queen Anne Street, was opened by the Duchess of York on December 5th. Her Royal Highness was accompanied by the Duke of York, and there were also present among the distinguished company the Minister of Health, the President of the Royal College of Physicians, the President of the Royal College of Surgeons, and the Master of the Society of Apothecaries. Cablegrams expressing loyalty to the Throne and congratulations to the College, received from groups of Fellows and Members in Canada, Australia, New Zealand, South Africa, India, Hong-Kong, and Peiping were read.

After the Duchess of York had declared the House open the President expressed the thanks of the College to Her Royal Highness for performing the opening ceremony and to the Duke of York for being present. Sir Robert Jones, Bt., K.B.E., C.B., of Liverpool, and Professor William Phillips Graves, M.D., F.A.C.S., professor of obstetrics and gynaecology, Harvard University, U.S.A., were admitted Honorary Fellows of the College.

The President then admitted the following, who were present in person.

*Fellows*: James Haig Ferguson, Barry Kyte Tenison Collins, Frederick John McCann, John McGibbon.

*Members*: George Herbert Alabaster, David Fyfe Anderson, William Cunningham Armstrong, Charles Botterill Baxter, Richard Alan Brews, Gladys Helen Dodds, Caroline Anne Elliott, Philip Charles Field, Alistair Livingston Gunn, Thomas Norman Arthur Jeffcoate, Hector Ross McLennan, Douglas Hamilton McLeod, Robert Newton, Frederick Ross Stansfield, Norman Lewis White.

The quarterly meeting of the Council was held on December 6th at the College House, with the president, Professor W. Blair-Bell, in the chair.

The following Members were promoted to the Fellowship of the College:

Cedric Lane-Roberts, Louisa Martindale, James Henry Drew Smythe, John St. George Wilson.

The following were elected to the Membership:

Stephen Alphonsus McSwiney, George Frederick Gibberd, Reginald Francis Matters, John Cecil Dowse, Edith May Hall, Alan Morris Johns, Ellen Douglas Morton, Richard Glyn Maliphant, William Joseph Rawlings.

Mr. W. Gilliatt (London) was elected to fill the "casual" vacancy on the Council caused by the election of Dr. J. S. Fairbairn to the presidential chair.

At the termination of the meeting Dr. J. S. Fairbairn (London) made the prescribed declaration on being inducted to the presidential chair, and received the keys of the seal and badge of office from the retiring president, Professor Blair-Bell.

On the motion of the president, the Council passed a resolution conveying the thanks of the College to Professor W. Blair-Bell for all he had done for the formation of the College, both before and during his period of office as the first president.

*Presentation of the President's Portrait*

On Sunday afternoon, December 4th, in the College House, Lord Riddell presented to the College the portrait by Mr. J. Souter of the retiring president, Professor W. Blair-Bell, in his robes of office. Many of the Fellows and Members were present at this ceremony.

# Medical Notes in Parliament

[FROM OUR PARLIAMENTARY CORRESPONDENT]

The House of Commons this week discussed the British war debt to America, and gave a second reading to the Rent Restrictions Amendment Bill. The committee stage of the London Passenger Transport Bill was completed, and the Housing (Financial Provisions) Bill was also down for second reading. Traffic congestion in London was debated by the House of Lords. Discussions proposed in the House of Commons on road and rail transport and on highway perils were abandoned to make time for the debate on war debts.

## General Medical Council

On December 12th Mr. BRACKEN asked the Lord President of the Council whether he would take an early opportunity of reappointing a lay member of the General Medical Council. Mr. Baldwin replied that there was no vacancy among the members of the General Medical Council nominated by His Majesty in Council, Mr. Hacking having been appointed on December 17th, 1931, to succeed the present Minister of Health (Sir E. Hilton Young) on his resignation.

## Malnutrition among Hammersmith Children

In reply to Mr. Hicks, on December 8th, Mr. RAMSBOTHAM stated that he had seen the report of the medical officer of health for Hammersmith, drawing attention to the malnutrition of children in that area owing to poverty and high rents. Children attending schools in the borough of Hammersmith came within the scope of the arrangements made by the London County Council for the provision of meals. The Council had made most careful arrangements to detect and prevent malnutrition, and there was no reason to suppose that these were not being carried out. Most of the children in question were not of school age, and the report did not state whether the children attending school were undernourished or not. The feeding of school children was a matter within the discretion of the local authorities. The Board of Education had no statutory power in the matter, though it had no reason to think that the arrangements were inadequate.

*Meals to School Children.*—In reply to Mr. John, on December 7th, Mr. RAMSBOTHAM stated that during the year ended March 31st, 1932, 157 local education authorities had provided meals for 319,715 individual children. The number of milk meals provided for payment amounted to 12,367,218, and the number of milk meals provided free was 35,490,997. The figures of the cost were not yet available. On December 8th Mr. Ramsbotham stated that during the month of October local education authorities in England and Wales had provided 243,315 children with 5,298,438 meals, of which 76.7 per cent. were free.

*Hospitals and Road Accidents.*—Mr. PYBUS told Sir J. Haslam, on December 7th, that Subsection (2) of Section 36 of the Road Traffic Act, 1930, enabled hospitals in certain circumstances to recover from insurance companies expenses incurred in treating motor accident cases. He regretted that he could not introduce further legislation on the subject.

*Investigation into Causes of Fatal Road Accidents.*—Replying to Mr. Louis Smith, on December 7th, Mr. PYBUS stated that he had made arrangements, in conjunction with the Home Secretary, for a special investigation during next year of the causes of fatal road accidents. A form of return suitable for mechanical tabulation had been prepared for use by all police forces. A detailed analysis of the information thus obtained would be published.

*Fatal Accidents in the Royal Parks.*—On December 12th Mr. ORMSBY-GORE informed Lieut.-Colonel Moore that during the year ended September 30th last there had been seven fatal motor accidents in the Royal Parks, six of which had occurred at night in Hyde Park. There had been in the same period 102 non-fatal accidents during the day and 62 at night. The number of casualties in the Royal Parks caused by motor vehicles was still regrettably high.

## Medico-Legal

### A JUDGE ON NEURASTHENIA

We have received an extract from the *Birmingham Mail* of December 1st containing the report of a case heard at Walsall County Court in which a stallman, aged 45, applied for an award under the Workmen's Compensation Act against his employers. It was stated by counsel that the applicant, named Arnold, was, in November, 1930, in charge of a pony, which kicked him. He was taken to hospital, where a kidney injury was diagnosed. He had not been able to resume work since, and the case put forward for him was that he was suffering from traumatic neurasthenia. The respondents said that the man's condition was one of progressive muscular atrophy which was not related to the accident. Before hearing the medical evidence on behalf of the claimant, Judge Tebbs made an observation to which we think the attention of the medical profession should be directed. "Judge Tebbs remarked that he had yet to be convinced there was any such thing as neurasthenia. Apparently when a doctor could not find any specific cause for a patient's illness it was put down as neurasthenia."

## The Services

### COMMISSIONS IN THE R.A.M.C.

The War Office announces that twenty-five permanent commissions in the Royal Army Medical Corps are being offered to qualified medical practitioners, under 28 years of age, registered under the Medical Acts. There will be no entrance examination, but candidates will be required to present themselves in London for interview and physical examination on January 24th, 1933. Applications should reach the War Office not later than January 16th. All information as to conditions of service and emoluments may be obtained either by letter or in person from the Assistant Director-General, Army Medical Services, The War Office, Whitehall, S.W.1. Further particulars will be found on page 35 of our advertisement pages.

### THE LATE CAPTAIN COLDSTREAM, I.M.S.

In view of the circumstances in which the late Captain W. J. A. Coldstream, Indian Medical Service, met his death, the Government of India has awarded an extraordinary pension to his widow. As such pensions are granted only in cases in which an officer has lost his life in, or in consequence of, the due performance of his official duty, or because of his official position, the fact of the award refutes any suggestion that the murder was due to a personal grievance against Captain Coldstream.

## Medical News

Professor Grafton Elliot Smith, M.D., F.R.S., has been elected Fullerian Professor of Physiology at the Royal Institution in succession to Professor J. B. S. Haldane, F.R.S., whose tenure of office expires next month.

The house and library of the Royal Society of Medicine will be closed from Friday, December 23rd, to Tuesday, December 27th, both days inclusive.

Dr. M. O. Bircher-Benner of Zürich will lecture, with lantern illustrations, on "The prevention of disease by correct feeding," for the Food Education Society at the twenty-first annual conference of educational associations at University College, Gower Street, on Friday, January 6th, at 11 a.m. The chair will be taken by Dr. G. E. Friend, medical officer, Christ's Hospital, Horsham (president, Medical Officers of Schools Association). Admission 1s., by ticket obtainable at the secretary's table.

At the next meeting of the Royal Microscopical Society at B.M.A. House, Tavistock Square, on Wednesday, December 21st, at 4.30 p.m., there will be an exhibition of modern binocular microscopes, and Mr. Peter Gray, Ph.D., will contribute notes on the practice of fixation for animal tissues. The annual general meeting of the society will be held on Wednesday, January 18th, 1933, when Mr. Conrad Beck will deliver his presidential address.

Sir John Collie and Dr. Henry Robinson have been appointed deputy lieutenants for the County of London.

The Society for the Provision of Birth Control Clinics is endeavouring to fill a gap in the training of medical students in the subject of contraception. On December 6th a lecture was given at the headquarters of the society, the Walworth Women's Welfare Centre; about 120 students attended. The society, which is maintained entirely by voluntary funds and exists primarily for the instruction of poor women, is finding more and more that one of the most valuable sides of its work is the training of medical practitioners and students in the practice of birth control at the fourteen centres scattered throughout the country. Further particulars of the work will be given on application to the secretary, Mrs. Evelyn Fuller, Society for the Provision of Birth Control Clinics, 153a, East Street, Walworth Road, London, S.E.17.

The Congress of French-speaking Paediatrists which was to have been held in Paris next July has been postponed owing to the international Paediatric Congress being held in London on the same date.

Dr. Robert Debré, who is well known in this country for his work on the prevention of measles and diphtheria, has been appointed professor of bacteriology in succession to Professor Lemierre, who has succeeded the late Professor Teissier in the chair of infectious diseases in the Paris Faculty of Medicine.

The Goethe medal, founded by the German President, has been awarded to Dr. Friedrich von Müller, professor of internal medicine, Dr. Richard Wilstaetter, professor of chemistry at Munich, and Dr. Ludwig Aschoff, professor of pathology at Freiburg i. B.

## Letters, Notes, and Answers

All communications in regard to editorial business should be addressed to **The EDITOR, British Medical Journal, B.M.A. House, Tavistock Square, W.C.1.**

ORIGINAL ARTICLES and LETTERS forwarded for publication are understood to be offered to the *British Medical Journal* alone unless the contrary be stated. Correspondents who wish notice to be taken of their communications should authenticate them with their names, not necessarily for publication.

Authors desiring REPRINTS of their articles published in the *British Medical Journal* must communicate with the Financial Secretary and Business Manager, British Medical Association House, Tavistock Square, W.C.1, on receipt of proofs.

All communications with reference to ADVERTISEMENTS, as well as orders for copies of the *Journal*, should be addressed to the Financial Secretary and Business Manager.

The **TELEPHONE NUMBERS** of the British Medical Association and the *British Medical Journal* are MUSEUM 9861, 9862, 9863, and 9864 (internal exchange, four lines).

The **TELEGRAPHIC ADDRESSES** are:
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The address of the Irish Office of the British Medical Association is 18, Kildare Street, Dublin (telegrams: *Bacillus, Dublin*; telephone: 62550 Dublin), and of the Scottish Office, 7, Drumsheugh Gardens, Edinburgh (telegrams: *Associate, Edinburgh*; telephone: 24361 Edinburgh).

### QUERIES AND ANSWERS

#### Corneal Ulcer

"M. C." writes: For years I have suffered with corneal ulcers; the resulting photophobia is rendering my life an utter misery. Sunshine, and particularly this winter sun, blinds me completely for moments at a time, so that it makes my work very difficult, and at times impossible. Being told that one is hypersensitive, and that the condition is a neurosis, helps not at all. Light of any kind, even from a candle, is borne badly. I wear a Crookes lenses, and have a varied assortment of sun-glasses. I should be grateful for any suggestions.

### Fissure of the Lips

Dr. A. G. B. DUNCAN (Kidsgrove, Staffs) would be glad of any suggestions for the treatment of persistent fissures in the lips.

### Dupuytren's Contraction

Dr. E. S. STOKES (medical officer, Metropolitan Water Sewerage and Drainage Board, Sydney, N.S.W.) writes: I note in your issue of September 24th a communication from a correspondent ("P. M. K.") which contains a statement that this condition is assumed to be due to a degeneration of the cervical plexus. I should be glad if your correspondent could inform me of the grounds on which this assumption is based.

### Cephalhaematoma in the Newborn

Dr. JOHN S. FAIRBAIRN (London, W.1) writes: In answer to the question asked by Dr. Charles J. Lewis (December 10th, p. 1087)—whether anyone else has doubted that trauma is the sole cause of these haemorrhages—I can refer him to page 444 of my textbook, *Gynaecology with Obstetrics*, second edition, where he will find the following statement regarding trauma: "This explanation would be more convincing if the swelling more often followed a difficult labour instead of a simple and straightforward one. In the majority of cases no satisfactory reason for its occurrence can be found." Dr. Lewis's speculation as to the causation is interesting, but unfortunately wholly lacks evidence to support it.

### Wanted: A Home

"AGITANS" (London, W.1) wishes to thank all the many readers (88 in number) who have replied to his request for information about a home for a case of paralysis agitans.

### Income Tax

*Assistant—Assessability of Board Residence*

"N. M." is an assistant receiving a salary of £4 4s. a week; his principal pays direct to his landlady £8 8s. a month for his board and lodging. Is the latter amount assessable on "N. M.?"

*** It really depends on the precise nature of the arrangements made. If "N. M." is liable to his landlady and the principal pays the monthly charge on his account, then he is legally in the same position as if the £8 8s. a month were paid to, and expended by, him. If, on the other hand, the agreement of employment merely provides for £4 4s. a week plus reasonable board and lodging, and the principal provides it elsewhere than at his own house as a matter of convenience, then in our view it is not liable to assessment to income tax.

*Expenses: Research and Journalistic Work*

"M. H. D. C." is a married woman—her husband is not in practice—who does research and medico-journalistic work. Can she claim such expenses as telephone, B.M.A. subscription, resident maid, clothes, apparatus, share of rent, rates, and other house expenses, etc. If these expenses exceed the gross receipts, can the net "loss" be set off against the husband's income?

*** The expenses can be allowed as long as they are wholly and exclusively incurred in carrying out the work, but she cannot deduct, for example, maid's wages incurred for domestic purposes to a greater extent than if she were not doing professional work. The proportion of the house expenses allowable in the circumstances—that is, the amount incurred in doing the work—would seem to be very small, and the question of a loss is not likely to arise. If there is a loss, however, it would be allowable, provided that the research work does not constitute an "employment," and therefore come under Schedule E.

*Wife as Assistant: Car Allowance*

"W. A. B." explains that his wife works as an assistant to his two partners and himself at a salary of £450, out of which she has to provide her own car and running costs. The inspector of taxes states that she cannot claim depreciation allowance as she is not a partner. Can a practitioner claim for the cost of one suit of clothes as a practice expense?

*** Mrs. B.'s salary is assessable under Schedule E, and she is entitled to deduct expenses incurred wholly, exclusively, and necessarily in the performance of her duties. This covers the running costs of the car. As regards "depreciation," that allowance was originally confined to Schedule D, but was extended by Section 16 of the Finance Act, 1925, to other schedules, and specifically to "employments." In our opinion Mrs. B. is clearly entitled to claim the depreciation allowance. We have not heard of a successful claim for the deduction of the cost of a suit of clothes, and the claim would seem to be barred legally by the requirement that allowable expenses shall be incurred "exclusively" for the purposes of the profession.

## LETTERS, NOTES, ETC.

### A Request to Practitioners

The Registrar of the General Medical Council (44, Hallam Street, Portland Place, W.1) writes: If any registered practitioner should receive an application from someone using the name of Mr. A. E. Thomas, M.B., Ch.B. (1918), U.Oxford for employment as locumtenent, or if any practitioner is able to give the address in England of a person using this name, I should be obliged if he would communicate with me at the earliest possible moment.

### Perforation of Intestine by Foreign Body

Dr. C. GIBSON (Worthing) writes: Dr. Urquhart's interesting account in the *Journal* of November 19th (p. 919) of perforation of a viscus by a small piece of wire reminds me of a somewhat similar case. In the early part of 1924 I saw, with a colleague, a man of 39, who had complained of abdominal pain for two weeks. Temperature and pulse were normal. There had been no nausea and no vomiting. Tenderness was in the right upper quadrant of the abdomen, and pain in that area was aggravated by movement. I was unable to make a definite diagnosis, but on seeing the patient two weeks later I found a small swelling, tender, hard, and fixed, in the right upper quadrant of the abdomen, and explored it under general anaesthesia. A fibrous nodule was found protruding from, and adherent to, the muscle sheath. In the process of dissecting this out it was cut into, and found to contain a lumen in which lay a bone about three-quarters of an inch long, believed to be a fish bone, its sharp point directed towards the surface of the skin. In its journey outwards through muscle it had become surrounded by a fibrous capsule, whose anterior end was palpable on abdominal examination.

### Injury to the Thoracic Aorta

Dr. J. HALPERIN writes: A man, aged 61, was admitted to the Royal South Hants and Southampton Hospital with the history of having fallen from a window. His condition was critical, and he died twenty-four hours after admission without regaining consciousness. Physical examination showed signs of fracture of the thoracic vertebrae with damage to the cord. The post-mortem examination revealed an interesting state of affairs. On opening the thoracic cavity it was found to be filled with blood. The heart was contracted and empty; the aorta showed early atheromatous changes, and at the level of the fifth thoracic vertebra the aorta was punctured by the corresponding vertebra. The fractured spicule of bone closely fitted the puncture in the aorta, which accounted for the prolongation of life for twenty-four hours. The third, fourth, and fifth thoracic vertebrae were fractured and the corresponding section of cord crushed. I am indebted to Mr. Nightingale, surgeon to the Royal South Hants and Southampton Hospital, for permission to publish this case.

### Corrigendum

In the report of a section meeting of the Royal Society of Medicine (*Journal*, December 10th, p. 1059) "Dr. G. M. Finlay" is recorded as having spoken of the "quinidine ring." This should read "quinoline ring," while the speaker's name should have been printed "Findlay."

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At the request of several members of the medical profession Messrs. John Wright and Sons have bound Dr. Robert Hutchison's little book, entitled *Some Principles of Diagnosis, Prognosis and Treatment*, in imitation leather for presentation purposes. The book was reviewed in our issue of July 14th, 1928 (p. 56).

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### Vacancies

Notifications of offices vacant in universities, medical colleges, and of vacant resident and other appointments at hospitals, will be found at pages 35, 37, 39, 40, and 41 of our advertisement columns, and advertisements as to partnerships, assistantships, and locumtenencies at page 38.

A short summary of vacant posts notified in the advertisement columns appears in the *Supplement* at page 304.

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## Practices and Partnerships for Disposal (continued).

16 LONDON, N.W. — WELL-ESTABLISHED PRACTICE ABOUT £800 p.a. in residential Suburb. Panel nearly 700. Good-class self-contained flat, with 5 bed and dressing rooms, etc., for sale, or rent. Scope for increase. Premium £1,200.

17 S. OF ENGLAND. — PARTNERSHIP IN OLD-ESTABLISHED Practice in important town within 80 miles of London. No panel. Attractive corner residence (7 bed and dressing rooms), in half acre of walled-in garden, with garage, etc., for sale. Ample scope for increase. One-half share returning about £1,080 p.a. Premium 2 years' purchase.

18 ITALY.—SEASON PRACTICE IN BEAUTIFUL PART. Receipts last year nearly £650. Fees mainly 10/6—£1 1s.; no midwifery. Premium £650.

19 KENT.—PARTNERSHIP IN MIDDLE AND WORKING-CLASS Practice averaging nearly £4,450 p.a., in an industrial Town under 25 miles of London. Panel about 2,600. Detached house (4 bedrooms) with garden to rent. Plenty of scope for increase. Premium one-fifth share 2 years' purchase.

20 ESSEX.—PRACTICE ABOUT £1,150 P.A. IN DEVELOPING district in the Thames Estuary. Panel 350. House with ample accommodation. Electric light, main drainage, garage, and very nice garden to rent Yachting. Plenty of scope for increase. Premium £1,700.

21 WEST END OF LONDON.—PARTNERSHIP IN GOOD-CLASS non-dispensing Practice of £3,300 p.a. No appointments or panel. Visits £1 1s. and £3 3s. (very few 10s. 6d.). Premium one-half share 2 years' purchase.

22 NORTH OF ENGLAND.—INLAND HEALTH RESORT.—NON-dispensing PRACTICE averaging £1,130 p.a. Small select panel. House (7 bedrooms) with large garden, for sale or rent. Premium —Practice—1½ years' purchase.

23 S. WALES.—OLD-ESTABLISHED UNOPPOSED PRACTICE. Income about £2,000, mostly contract. Panel over 1,700. Scope for Surgery, if desired. Good house (5 bed and dressing rooms) with surgery attached, for sale. Appointments transferable. Premium 1½ years' purchase.

24 HOME COUNTIES.—OPHTHALMIC PRACTICE BETWEEN £300 and £400 p.a. in desirable Residential Town, under 15 miles from London. Good detached house (4 bedrooms) with large garden for sale. Good reasons for plenty of scope for increase. Premium £300.

25 WITHIN 10 MILES (NORTH) OF LONDON.—STEADILY INcreasing non-dispensing PRACTICE in developing Residential District. Cash receipts 1931, £437. Small panel. Visits 5/-, 10/-, and 12/-. Very attractive semi-detached house (6 bedrooms and dressing room), garage, garden, front and back, for sale. Plenty of scope for increase. Premium 1 year's purchase.

26 HOME COUNTY.—PRACTICE ABOUT £1,000 P.A. IN FIRST-rate Country Town under 40 miles from London. Panel 250, increasing rapidly. Choice of (large or small) house. Scope for increase. Premium £1,500.

27 LONDON, E.—PRACTICE AVERAGING £715 P.A. IN POPULous area. Panel 365 (increasing), house (3 bedrooms) to rent. Premium £650.

28 LONDON, E.C.—OLD-ESTABLISHED "LOCK-UP" PRACTICE of £646 p.a. Panel 459. Living accommodation to rent if desired. Premium £1,000.

29 MIDLANDS.—PARTNERSHIP (AFTER PRELIMINARY ASSISTantship) in a very old-established Practice of between £1,700/£1,800 p.a., in pleasant market town. Panel 700. Pemium for one-half share at 2 years' purchase.

30 S. KENSINGTON.—PRACTICE OF ABOUT £400 P.A. PANEL 300. Corner house (4 bedrooms) to rent. Premium £500.

31 S. AFRICA. — OPHTHALMIC AND GENERAL PRACTICE about £1,400 p.a. (about 60 per cent. Ophthalmic), including appointments £400. No Ophthalmic opposition. Premium £400.

32 CO. DURHAM.—PRACTICE OVER £500 P.A. IN RESIDENtial colliery district, near two large towns. Panel 370. Centrally situated 7-roomed house, with good Surgery and Dispensary, for sale or rent. Practice could be very quickly substantially increased. Premium £650.

33 MIDLANDS.-COUNTRY PRACTICE OF £1,500 P.A. (INCLUDing £600 from panel), easy reach of several good towns. Well-situated house (6 bedrooms), gas, electric light, etc., for sale. Premium for Practice £2,500.

34 LONDON, W. — GOOD-CLASS NON-DISPENSING PRACTICE £2,735 p.a. in the West End. No midwifery. The house is in one of the best parts, and can be rented on long lease. Premium, with good introduction, £5,000.

35 N. OF ENGLAND. — OPHTHALMIC PRACTICE OF OVER £1,600 p.a. in an important town. Excellent scope for one keen on clinical and operative Ophthalmology. Large house in first-class condition for sale. Purchaser should be well qualified. Premium £2,500.

36 S. AFRICA. — PRACTICE OF ABOUT £2,000 P.A. IN A famous town. Pleasantly situated detached bungalow (5 bedrooms), garage, and small garden for sale. Good hospital (with private wards). Premium £1,100.

37 LONDON, WEST END. — X-RAY AND ELECTRO-THERApeutic Practice. Receipts 1931, nearly £620. Suitable and convenient flat at moderate rent, on lease. Premium £925.

38 LONDON, E.—CASH AND PANEL PRACTICE OF £860 P.A. in populous district. Panel 570. Small house to rent on lease. Premium 1½ years' purchase.

39 KENT. — COUNTRY PRACTICE OF OVER £800 P.A. IN beautiful part. Panel nearly 400. Very attractive residence (5 bedrooms), central heating, grounds of 2½ acres, orchard, etc., for sale. Sport. Premium 1½ years' purchase.

*"MEDICAL PARTNERSHIPS, TRANSFER, AND ASSISTANTSHIPS"* (BARNARD & STOCKER). *Post free* 12/6.

**All communications to be addressed to Mr. A. V. STOREY, General Manager.**

# BOVRIL MEDICAL AGENCY, Ltd.

ALDINE HOUSE,

## 10-13, BEDFORD STREET, STRAND, LONDON, W.C.2.

**Telegrams: BOVMEDICAL, LESQUARE-LONDON.** **Telephone: TEMPLE BAR 1616 (3 Lines).**

**Under the personal directorship of Dr. J. FIELD HALL and J. C. NEEDES**
who have both had many years' experience as Medical Transfer Agents.

**The commission chargeable in respect of any practice or partnership in Great Britain placed exclusively in the hands of this Agency has been fixed on an exceptionally favourable scale, the maximum chargeable on any transfer being fifty pounds (£50). Full Schedule of Terms and Conditions will be forwarded on application.**

**Accountancy and legal services furnished by the Agency, where desired, at moderate inclusive charges. No charge is made to Principals for the introduction of Locum Tenens or Assistants.**

1. YORKSHIRE.—PARTNERSHIP.—A one-fourth share, with increase later, is offered in a very sound old-established general Practice, situated in favourite country town, within easy reach of coast. Gross cash receipts for the last three years have averaged £3,700, and for the immediate past twelve months £4,180. Panel of 2,000, and appts. bring in about £500 p.a. Fees 5/- to 21/-. House contains 3 reception, 5 bedrooms, etc. Electric light; garden. Garage. Can be rented at £46 p.a. Or other houses available. Excellent sport and good schools. Premium for share 2 years' purchase.
2. CHESHIRE.—NEAR COAST.—Old-established middle and working-class PRACTICE, averaging for the past three years over £1,300. Panel of 550. Fees from 3/6. Good house, with 3 reception, 7 bedrooms, etc. Price for freehold £1,200, part on mortgage.
3. PARTNERSHIP.—ANGLO-WELSH BORDER.—A one-third share, with increase later, is offered in an old-established good mixed Practice, situated in pleasant country town, amidst beautiful surroundings. Gross cash receipts for last 12 months £1,800, of which £800 is from panel and appts. Purchaser should be interested in medicine as Vendor undertakes surgery. Suitable accommodation obtainable. Premium £900, part by instalments if desired.
4. LONDON, WEST CENTRAL.—Better-class PRACTICE, producing for last 12 months £600, including panel of 160. Fees usually 5/- to 21/-, and a few at 3/6. Midwifery 5 to 15 gns.; about six cases yearly. Maisonette, containing waiting room, consulting room and dispensary, sitting room, bedroom, kitchen, and bathroom, etc. Can be rented on lease, and part sublet if wished. Premium £650.
5. SOUTH CORNWALL.—Old-established unopposed PRACTICE, situated in very pleasant district, with mild climate. Gross cash receipts approximately £950 to £1,000 p.a., including £275 from panel and appointments. Fees 5/- to 7/6. Very nice house, overlooking the sea, containing 3 reception, 4 bedrooms, 2 maids' rooms, bathroom, etc., and professional accommodation. Garage. Garden. Freehold for sale, £300 down, and balance on mortgage. Premium £1,400, to include drugs, etc. Good scope for increase.
6. LONDON, WEST.—Better-class, non-panel, and non-dispensing PRACTICE, established over twenty years, and producing about £1,300 p.a. Average gross cash receipts for the last three years £1,614. Fees 10/6 to 21/-. Only a few cases of midwifery from 30 gns. House contains 3 reception, 7 bedrooms, 2 bathrooms, etc. Specially built consulting room. Electric light. Garage. Price for Practice and lease of house £3,000.
7. CHANNEL ISLANDS.—Well-established better-class PRACTICE, averaging over £600 p.a. Good fees. Not much midwifery, but scope for this work if wished. Suitable house on rental. Moderate premium.
8. NORTH DEVON.—Very old-established unopposed country PRACTICE, in beautiful district, within easy reach of the sea. Cash receipts over £900, including panel and appointments about £300. Excellent residence (3 reception, 6 bedrooms, bathroom, etc.). About half an acre of garden, tennis lawn, etc. Garage. Water laid on and main drainage. Rent on lease £60 p.a. Premium £1,450. Good hunting, shooting, fishing. Educational facilities.
9. SOUTH-WEST OF ENGLAND.—Coast Town.—Middle and working-class PRACTICE, rapidly increasing, and producing about £600 p.a., including panel of 400. House can be rented at £75 p.a., and contains 2 reception, 3 bedrooms, etc. Electric light. Garden. Prem. £750.
10. LONDON, WEST.—Better-class, non-panel, non-dispensing PRACTICE, producing about £800 p.a. Fees chiefly 7/6 and 10/6, and some at 5/-. Midwifery from 10 guineas. Suitable Maisonette with 8 rooms, and having a large garden. Rent £200 p.a. Premium £1,000.
11. SURREY.—Growing residential neighbourhood, within easy reach of London.—Mixed-class PRACTICE, producing about £1,000 p.a., and offering good scope. Panel of 400. Fees from 3/6. Suitable house with 2 reception, 3 bedrooms, etc. Price for freehold £1,400, part on mortgage. Premium 2 years' purchase.
12. PARTNERSHIP.—NORTHERN COUNTIES.—A one-third share (with increase later) is offered in a good middle-class non-panel Practice, situated in a prosperous town, with pleasant surrounding country. Gross cash receipts average about £3,300 p.a. Fees 3/- upwards. Suitable house, with 2 reception, 4 bedrooms, etc., and small garden. Price £1,200, part on mortgage. Excellent sport and educational facilities. Premium for share, £2,000.
13. KENT.—Good-class NUCLEUS, non-dispensing, in pleasant residential district within 20 minutes' run of London. Receipts between £350 and £400, and offering exceptionally good scope. Fees 10/6 to 21/-. Good house, ideally situated, with ¾ of an acre of garden, tennis court, etc. Price freehold £2,800, to include premium for Practice. Excellent educational facilities.
14. PARTNERSHIP.—CHESHIRE.—Half share (producing over £2,000 p.a.) of very old-established Practice, situated in a most pleasant residential district within a few miles of a large town, can be acquired by an experienced gentleman between 35 and 40 years of age. Panel of 1,200—1,300. Patients all classes. Fees good and expenses light. Desirable residence available, with ample accommodation, garden, garage, etc. Price £2,000 (£1,200 on mortgage). Premium £4,000. Every social amenity, sport, and very good educational facilities.
15. KENT.—WITHIN FORTY MILES OF LONDON.—Very old-established good industrial class and non-panel PRACTICE, situated in a large town of 60,000. Cash receipts last financial year nearly £2,300. Visits 3/6 to 5/-. Midwifery 2½ gns. upwards; 25 to 30 cases yearly. House contains surgery accommodation (separate entrance) 2 reception, 7 bedrooms, bathroom, etc. Garage. Rent on lease (19 years to run) £100 p.a. Premium 1¾ years' purchase.
16. MIDDLESEX.—Residential District.—Mixed-class PRACTICE, averaging £537 p.a., including panel of 150. Fees from 3/6. Corner house, with 2 reception, 5 bedrooms, and professional accommodation, with separate entrance. Freehold. Golf and other sport. Very good schools. Price for practice and house £2,100, or near offer, part on mortgage.
17. PARTNERSHIP.—LONDON, SOUTH-WEST.—A one-half share is for disposal in an old-established very good middle-class Practice, in pleasant residential open suburb, within easy reach of City and West End. Average gross cash receipts for past 3 years £2,557. Panel of 1,400. Visits from 4/-. Not much midwifery, from 3 to 7 gns. House contains 2 reception, 6 bedrooms, etc., and professional rooms. Garden. Good schools and sport. Premium £2,559.
18. LONDON, OUTLYING SUBURB.—Well-established increasing middle- and working-class PRACTICE, situated in a well-populated district, averaging £1,240 p.a. (last year £1,486) including panel of about 500. Exceptionally fine residence (ample accommodation) with about ¼ an acre of garden, garage, etc. Price (freehold) £2,000, or would be let on long lease at £140 p.a. Premium 1½ years' purchase. Excellent educational facilities. Golf, etc.
19. WESTERN SUBURB. — Old-established and mainly middle-class PRACTICE, worth about £400 p.a. and offering scope. Panel of 108. Visits 3/6 to 21/-. Midwifery 3 gns. upwards, not encouraged. Good house (6 bedrooms, etc.) with very nice garden and garage. Price leasehold (42 years to run) £1,850, £1,200 on mortgage. Premium moderate.
20. X-RAY PRACTICE, with small general PRACTICE attached; old-established and situated in good residential Suburb, within easy reach of City and West End. Average gross cash receipts for last three years, £1,335. Exceptionally well-equipped professional accommodation, with all the latest apparatus and appliances which can be taken over by purchaser at moderate valuation. Very good house, with well-stocked garden, can be rented or purchased. Premium 1½ years' purchase.
21. NEW ZEALAND (North Island).-Old-established non-dispensing PRACTICE, situated in increasing county town, amidst beautiful surroundings. Cash receipts for past five years average £1,400 p.a. Attractive residence standing in an acre of garden, with tennis court, orchard, etc. Electric light. Can be leased. Educational facilities, sport, etc. Premium £1,000.
22. SANATORIUM.—SOUTH-WEST OF ENGLAND, and within 20 miles of County Town. Very old-established. Receipts for the past three years average over £9,000 p.a. Patients middle and upper-class. Accommodation for 45. Price for goodwill, freehold house, with large grounds, furniture, fixtures, etc., is moderate.
23. MANCHESTER. — Suitable Lady Doctor. — Middle and working-class PRACTICE, averaging £670 p.a., including panel of 450. Fees 2/6 to 7/6. House contains 3 reception, 5 bedrooms, separate surgery entrance, etc. Bathroom. Electric light. Garage. Rent on lease £80 p.a. Premium 1½ years' purchase. Very large scope for increasing the Practice as Vendor has only worked it as a part-time one.

### WANTED TO PURCHASE.

1. LONDON, or within twenty miles.—Good mixed-class PRACTICE, with panel of about 1,500. Income £1,200 to £1,500. Fair-sized house and garden.
2. LONDON SUBURB, or good Provincial Town.—Better-class PRACTICE averaging about £1,500 to £2,000 p.a., with fair-sized panel. Small house sufficient. Ample capital.
3. SOUTH OF ENGLAND or RESIDENTIAL SUBURB OF LONDON.—Chiefly better-class Practice, offering scope for development. Substantial panel required. Nice house and garden. Ample capital for suitable practice or partnership.
4. LONDON or SUBURBS, preferably West or South-West.—PRACTICE or PARTNERSHIP producing about £1,200 p.a. or less if scope. Fair-sized house, with garden.
5. MIDLANDS or SOUTH OF ENGLAND (not Devon or Cornwall).—Country PRACTICE bringing in from £750 to £800 p.a. Small house to rent, with good grounds. Must be within reach of good fishing.
6. LONDON AREA.—ASSISTANTSHIP, with view to Partnership, in good mixed-class Practice. Share required about £1,000 p.a.
7. MANCHESTER or SUBURBS.—Well-established PRACTICE, in pleasant district. Income from £1,000. Good panel essential. Capital avail.

**The Agency has made arrangements for special facilities, on very favourable terms, to be afforded to approved purchasers for the advance of part of the premium for any suitable practice or partnership. Full details on application.**


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